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EDUCATION

VOLUME 74 — No. 10

AVIATION EDUCATION NUMBER

Principles for Effective Aviation Education

Significance of Education in the Air Force Officer's Career

The Rôle of Air Explorer and Civil Air Patrol in Aviation Education

The Importance of Aviation Education in the Elementary and Secondary Schools

The San Jose State College "Off-Duty" Program at Parks Air Force Base

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The Institute of Aviation of the University of Illinois

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DEVOTED TO THE SCIENCE, ART, PHILOSOPHY AND LITERATURE OF EDUCATION

VOL. 74 JUNE, 1954 No. 10

AVIATION EDUCATION NUMBER

RUSSELL N. CASSEL, Major, USAF, *Editor*

Chief, Training Information and Research Liaison Division
Training Analysis and Development Directorate
Headquarters Air Training Command
Scott Air Force Base, Illinois

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EDUCATION

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Principles *for* Effective Aviation Education

By RUSSELL N. CASSEL, Major, USAF

Chief, Training Information and Research Liaison Div.,
Training Analysis and Development Directorate,
Headquarters Air Training Command,
Scott Air Force Base, Illinois

Dr. Cassel is currently a Major on active duty with the Air Force and is Director of Training Information and Research Analysis Division at Headquarters Air Training Command, Scott Air Force Base, Illinois. He is editor of a new journal sponsored by The Correctional Psychologists Association of The American Psychological Association. Prior to his entry into active duty with the Air Force he was an assistant Professor of Educational Psychology at San Diego State College, California. He is the author of The Cassel Group Level of Aspiration Test and The Cassel Psychotherapy Progress Record published by Western Psychological Services, The Cassel Development Record by E. Z. Bee Pub. Co., Belleville, Ill. During World War II he served as Personnel Consultant on the staffs of General Stillwell, General Buchner, and for The Eleventh Air Force overseas.—R. P. P.

THIS ARTICLE is concerned with outlining a program of 'aviation education' that will insure optimum development of *Total Air Power* for the defense of our country. It is believed that such a program must begin in the basic structure of our public schools, and through them permeate the social climate of all other social agencies. Thus, the article is directed at the many thousand teachers and instructors throughout the United States whose primary duty is the molding and guiding of the minds of our youth. For it is the youth of today who become the adults of tomorrow.

Each year many thousands of these youth graduate or leave our public schools to join the ranks of industry, private enterprise, and our Armed Forces. Daily, through marriage, new family units are formed, and new youth take their place along side of our elders in all social agencies. The degree of preparedness with which our youth enter their new roles in this *Air Age* with respect to 'aviation education' is determined largely by the schools.

The Present Threat of Communism

Today the world population is divided into two separate armed camps with each one supporting a different ideology or way-of-life that is entirely unacceptable by the other, i.e. Democracy and Communism. In the past two decades more than 800 million people have been subjugated to the will of a

handful of Communistic rulers in Soviet Russia. Evidence indicates that many millions of them have been reduced to total slavery, and that a proposed program seeks to purge the rest of the civilized world.

The still-free peoples of the world have sought to unite in a common program of defense to halt this aggressive program for the total enslavement of mankind. They have accepted Russia's challenge to compete in developing armed superiority as a temporary and emergency defensive measure. Thus, total civilization has embarked on an armament program to a degree far beyond that experienced by mankind before during times of peace.

Combined and running parallel with the armed program of Russia is a program of 'cold war'. It includes all of the elements usually incorporated in *Psychological Warfare* by enemy nations under conditions of declared warfare. Combat hostilities at opportune places and times combined with sabotage by use of fifth column persons, and other aggrevated measures designed for the economic destruction of the free nations are common-place.

Evolutionary Progress of Mankind

It has often been said that the cradle of early civilization may be traced directly to Ancient China. As man progressed in his evolutionary growth and development of more effective means for survival and the attainment of happiness, the countries which formed the historic vanguard for this attainment represent geographically what has often been called the *civilization progress path*. The spearhead for this path led southward from China to Ancient India and Egypt, thence northward to Crete and Greece, westward to Rome and Spain, northward to France and Germany, and thence westward to England and the United States.

In general this path of man's progress tended to follow in a direction from East to West, and to lie well within the moderate climate regions of the northern hemisphere. Each new country, and approximately in the order named, tended to serve as a focal point for the development in adjacent and neighboring countries. Progress in these neighboring countries tended for many years to be roughly proportional to their immediate proximity to the focal country.

In a sense progress tended to be cumulative in nature with each succeeding country accepting the development in the country that had gone before and proceeding from there in their own unique way. The method of progress has adhered to the adaptation principle as described by Charles Darwin, and in general man has developed as much as he needed to grow in order to adapt to the culture and daily problems in which he found himself; that and no more. Through a process of reorganization of his past experiences he tended to retain behavior which has yielded satisfaction and facilitated survival, and to reject all other.

Today, and for many decades past, we in the United States serve as a symbol for the *Ideal* in the growth and development of man. This symbolization is based upon the level and standard of living which our masses of common people are able to participate in continuously without the enslavement of other peoples. Few nations can approach our standards of vocational, educational, cultural, and socio-economic advantages. We do not covet the possessions of other less fortunate peo-

ples nor seek to exploit them. Rather, we extend them our sympathy and show our sincereness with constructive help and aid of every type and kind.

Thus, the hope and prayer of free and enslaved men all over the world looks to the United States for leadership and guidance as the flame of freedom burns low once more. We have the solemn obligation to save civilization from enslavement by Communistic Dictators and have the light of freedom snuffed out, we must not fail them.

The Role of Air Power

Undisputably we are living in the *Air Age* and the age of *Nuclear Fission*. The destructive potential of these two forces properly coordinated stagger the imagination of man, and threaten his own destruction. It is to both of these means that the free world must turn as a temporary defense measure of expediency while we prepare and implement our ultimate program of international education.

The tactical value of 'strategic air power' in combat has been demonstrated in World War II in two direct ways: First, by bombing areas in Germany far behind the fighting forces, we were able to cripple transportation facilities, and disrupt the production of vital materials of war. This technique proved to have direct significant effect on the enemy fighting forces on the combat line. Second, by dropping two atomic bombs on separate cities in Japan in 1945, a major power was forced to surrender a large standing army few of which had met actual combat. So devistating were the consequences of these atomic explosions that the Japanese government could not chance additional exposure of their homeland, and surrendered immediately.

Because of the increased speed of modern aricraft and the potential of nuclear fission, the distance between any two countries in the universe has become negligible. The value of bumper or buffer countries as a measure of defense has been reduced to nil. Single nations can no longer hope to withstand the armed might of collective peoples, and thus the interdependence of nations becomes inevitable.

Our experience in the development and use of nuclear fission has indicated the value of progressive scientific developments over the policy of adequate armament by traditional weapons. In the competition between Communistic countries and the Free countries of the world, great emphasis has been placed on the role of research in the development of new equipment for warfare, and improvement of the old. Such emphasis has yielded cumulative scientific advancement with a parallel development of progressively more complex equipment.

Man cannot be conceivably divorced from the machines and inventions which he creates and develops. Since the days of early civilization man has progressed far in his conceptual power for adaptation in the universe. However, during the last decade, nearly in every scientific area of concern, he has made more progress than has been made during the entire history of the race. So rapid has been the advancement in the machine area, that a separate science has emerged called *Human Engineering* with the sole objective of insuring the adaptation of the machine to the physical and psychological limitations of man.

Agencies Involved In Total Defense

The responsibility for the total defense of a nation cannot be delegated

to any segment of the population short of the total population of the whole country. To fail to incorporate all of the agencies or facilities would result in only partial defense. To be effective, these agencies must be recruited, coordinated, and then integregated into a single fighting force.

In our country the Department of Defense is responsible for the total defense of the nation, and all of the facilities and peoples are subject to conscription during times of emergency. The conscription of industry, personnel for the Armed Forces, and sometimes labor is a routine and universal practice.

With the high premium placed on research, advancement, and training as indicated by the two atomic bombs on Japan, future conscription of our public schools and institutions of higher learning as agencies of defense is inevitable. Programs of 'aviation education' must begin in the lower elementary grades and provide suitable orientation for our youth that will insure effective utilization of his servies as he matures into adult rôles. Sufficient orientation in 'aviation education' for our public schools can no longer be found in the history books of previous wars, but must be based on present and future anticipated developments if it is to be effective.

The present lag in orientation by our schools is partly caused by the need to maintain security restrictions on circulation of new developments to prevent them from falling into the hands of the enemy with whom we are competing for military superiority. Also, it is caused by lack of effective liaison between the Department of Defense and our public school agencies. Thus, the technical and flying training programs in the Air Training Command must spend much valuable training time in orientation programs which might better and more effectively be accomplished by the public schools.

Principles Essential For Effective Air Power

This article does not present a panacea which will automatically insure effective Air Power. Rather, certain principles appear to have emerged through the considerations treated in this thesis with respect to the rôle of the public schools in the development of *Total Air Power*, and this article is a summary of the more important ones.

- effective 'aviation education' begins in structure of public schools of the country.
- through the public schools effective 'aviation education' will permeate the social climate of all social agencies.
- counter-psychological warfare measures are an inherent part of effective 'aviation education.'
- the United States stands as a symbol of development resembling an *ideal* to other world peoples and nations.
- the hopes and prayers of free and enslaved peoples rest with the United States to stem the progress of Communistic enslavement.
- the destructive potential of Air Power and Nuclear Fission stagger the imagination of men, but must be considered only as a temporary expediency defense measure.
- scientific development has taken precedence in the consideration for armament superiority.
- the science of Human Engineering is designed to insure the adaptations of the new and complex equipment to the limitations of man.
- conscription of public schools and institutions of higher learning as a measure of defense is inevitable for the future.

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Significance *of* Education *in the* Air Force Officer's Career

By CECIL R. CORBIN
Hq. Air Training Command, Scott AFB, Ill.

Possessed with an enthusiastic zeal for improving the management of human resources and increasing career attractiveness in the military service, the author's past several years have been spent as a Civilian Technical Consultant in the Personnel Planning activity of Headquarters Air Training Command. A varied background of experience in military activities, approximately ten years experience in teaching and educational administration in the Public Schools of Missouri and the Civilian Conservation Corps and training in Business Administration and Education at Southwest Missouri State College well equipped the author to discuss the importance of Aviation Education in the Air Force Officers career.—Editor

THE ABILITY of the Air Force to span the oceans and to reach across the continents of the world within a matter of hours has necessitated establishing new concepts of aerial warfare and the fashioning of its own kind of efficiency, procedures and traditions. In this continuous surge forward toward an era of supersonic aircraft and guided missiles, the present-day Air Force officer is thrust into dimensions of constant change.

The vast technological advances in equipment and aircraft, and the addition of atomic mutations to the list of armaments, have greatly altered the military strategy and increased the significance of the Air Force officer's job. The importance of recent advances in the equipment and material areas resulting from the inventive genius, vigorous research and vigilant efforts of Air Force planners and Industrial Engineers can no longer be denied.

Impressive as all of these new implements of warfare are, and as strong a bulwark of safety and protection as they afford, they are pretty much devoid of capability without the human element which was responsible for their design and development to also place them into use and to keep them operating.

Despite all the frailties, personality quirks and inadequacies of capacity and capability found in the human being —in reality, it is MAN who is our *real* secret weapon. It is understandable in this period of pilotless aircraft, guided missiles and other robots of war that it is easy to overlook the complexity and significance of MAN. No engineering genius can give machines or electronic apparatus the power of reasoning nor can they be imbued with patriotism, loyalty or *esprit de corps*. Man is still *master* of the machines. All of the super devices and materials that the Air Force has, and is developing today, are of little use without man's controlling influence.

It is with this, the most important resource—the human being—that the Air Force is deeply interested. Top military leaders today are intensely concerned over the availability, technical proficiency, career satisfaction, and general welfare of this *all* important element of our national defense arsenal. It is with the recognition of a critical need for greater skill in the area of hu-

man relations that the Air Force has embarked upon long term training and career development programs for its military leaders as well as its specialists and skilled technicians. It is the leaders, the managers, and the staffs that today's Air Force is dependent upon to carry out its ideologies, traditions and doctrines, and to assume the responsibility for improving the management of its people. To establish rapport and mutual respect, their educational qualifications must at least be comparable to the highly skilled and relatively well educated specialists they supervise.

The Air Force officer is plunged into a new geopolitical era in this time when Air Power becomes America's primary weapon. Today's officer must certainly be an expert in the materials and techniques of modern warfare and possess a functional understanding of the new weapons, their capabilities and their limitations. But more than that, he must be versed in world affairs—in the physical, social, political, human, and economic aspects of the nations of the world. He must, in fact, be a world geographer and geopolitician. He must be able to evaluate the great mass of scientific data available to him with sound judgement and with a vision of the future. He is required to think in terms of air tactics, strategy, and logistics with mature objectiveness. Strategy has taken on more complex and far-reaching dimensions. It necessarily involves physical, psychological, political, geographic, and economic considerations. The Air Force leader of today, or within the next ten years for that matter, must be concerned with the scope as well as the vigor of his views and beliefs, and be capable of accepting new magnitudes and responsiblities. He must be able to make new comparisons and readily adjust to rapidly changing economic and social situations. For his career to offer self satisfaction and be so aligned as to meet the demands of the Air Force, the young officer must possess the same vitality and determinedness as did the pioneers of Air Power. At the same time, he must be capable of developing the amenity and erudition so necessary in meeting the demands made upon him by this jet-atomic age. Officers of the Air Force, even though not cloaked by the tradition and precedents common to the Ground and Naval forces, do find themselves the heirs of a modern tradition—one which takes progress for granted. Their thinking must be audacious as well as realistic. They must be generally educated, cultured and informed to cultivate and command the respect and confidence of the citizenry which looks to them for primary defense against the terrible weapons of today and tomorrow. Mere technical competence does not command such respect and confidence.

The career of the Air Force officer must of necessity be patterned within the structure and requirements of the service. But, his career planning must be in consonance with the universal American theme that life holds a promise for *all men*. Exigencies of the military service, as well as disintegrating practices and ideas compelled by such a rapidly changing society, have weakening effects upon this philosophy. Education is not the *only* means of achieving the proper faith in *individual ability* and in the true meaning of career development, but it is one of the most commonly recognized institutions man has built to accomplish it.

The Air Force, in recognition of the importance of its officers and the reliance that must be placed upon them, takes immediate cognizance of the significance of education to the individual officer's career and to his effectiveness, and its impact upon the quality of Air Power. Admittedly, air warfare has come upon us so rapidly that until the end of World War II and Air Force autonomy, little time had been given to the thinking that the military instruction of the officer complement was a new military problem. Flying, which has been the dream of mankind for many years, has brought to light the urgent need for training. The airplane has added new dimensions to man's existance and to his military career as well. There are but few experiences and effects of environment which prepare the individual for this new sphere of activity. Although increased use of the air as a means of transportation has brought a better understanding of many of the problems faced by the Air Force, still ordinary life provides little preparation for the myraid jobs in connection with Aerial Warfare. This, coupled with the fact that the Military Services cannot skim off the top quality from the national manpower pool, but must compete with industry for their qualitative share of the nation's manpower, places the burden of training its people for the most part, squarely upon the shoulders of the Air Force. This has necessitated establishment of one of the largest educational systems of any service in the world.

Procurement sources through direct commissioning, ROTC and Selection of Cadets from civil life yield many exceptionally well qualified young men—men with college degrees, and in the case of direct commissioning, individuals with considerable technical experience. But, regardless of their training or experience, they must be given indoctrination in military science, training in the techniques of the specific job they are to perform, and acquainted with the various general education subjects which contribute toward improving their performance, effectiveness, motivation, and career-mindedness. Even this rather inclusive program of training lacks sufficiency and must be supplemented through exchange programs, attaché and liaison tours, rotation, and experience. Provision must be made for giving the officer the broad knowledge, perspective, logistical and strategic insight, cultural and diplomatic sauvity, the geopolitical outlook, and the understanding of human relations requisite to performance of the high level staff, planning and command functions inherent in job assignments as his career progresses.

The career development and improvement of Air Force officers is a program of great magnitude, significance and responsibility. A program of such proportions must be carefully founded and formulated—and no sounder plan can be conceived than to ensure that it is undergirded by Education, embellished by tradition and inspired by exemplary leadership and realistic planning.

To provide training in such an array of subjects and of the scope which is required deserves the most careful planning. Officer sources provide, for the most part, young men who have little experience in military duties. For this reason, and because of the stringent requirements placed upon the officer component, it can be stated generally that three elements are involved in the education of an Air Force officer:

a. Military instruction.
b. Technical training.
c. General Education.

Emphasis on the role of the officer in the Air Force; the fitting in of discipline, comradeship, organization, and administration to his concept of aerial warfare; and rounding out his knowledge of history and traditions, all become a part of initial military indoctrination. The Air Force Reserve Officer Training Corps (AFROTC) program conducted at colleges and universities throughout the country plays an important role in this educational area. In-service indoctrination and initial training are provided through Officer Candidate School (OCS), Officer Basic Military Course (OBMC) and intial counseling programs.

Specialization has become, to a great extent, the means for advancement in modern society. The system of specialization has also found its way into the Air Force and admittedly, without the specialists and technicians the mission would many times fail. But, it is recognized that just as modern warfare cannot be carried on by the general-duty officer, neither can the technician be permitted to plan the strategy. The quality of leadership which is so essential in the officer, proceeds from the inner convictions and mechanical know-how is a poor substitute for it. But because of the extent of technological developments, the training of officers in the specific techniques of using such equipments and for carrying out the complex support functions is a necessity. This important element of the officer's education must have been provided either by civilian educational institutions prior to his embarking on an Air Force career or provided through the efforts of the service after his entry on duty. As has been stated because of the complex nature of military functions and the fact that the Air Force's counterpart is rarely found in industry, a preponderance of the technical qualification for the officer componet must be provided through in-service educational facilities. Consequently, Air Force schools have been established to provide pilot training, observer and air-crew training, and training in the many technical subjects such as maintenance engineering, communications, armament, intelligence, comptroller, personnel, and supply.

The area of general education previously referred to, even though the term has an airy and unspecific connotation, is concerned with the kind of training where there is a spirit to transmit, where beliefs, ambitions and human relations principles are conditions of learning. It is this area of training that plays such an important part in shaping the career of the Air Force officer and in providing the qualification for high level command and staff assignments. It is through this type of training that lessons are learned from:

a. The collective memory of mankind through the study of history;
b. An understanding of the physical scheme of the world and the development and use of mathematical systems;
c. An understanding of the rationalization and localization of industry;
d. Appreciation of the fine arts;
e. Philosphy;
f. Language and culture of foreign countries;
g. Literature;
h. A study of geopolitics and their importance to strategy—either in peace or in conflict; and
i. A thorough knowledge of lead-

ership, management and human relations principles.

This extensive and seemingly all-encompassing program of general service training cannot be too closely likened to programs of civilian universities. Rather, the Air Force program compares more properly to the over-all system of education whose function is that of increasing the competence of all members of society as well as providing for full development of individuals with superior potentialities. This training must be open to all officers who are in need of education for advancement in their careers.

This broad educational program is sponsored and conducted through the Squadron and Field Officer Courses, Advanced Officer Technical Courses, Air War College, Air Force Institute of Technology, Civilian Institutions programs, and Industrial College of the Armed Forces. Plans are also in formative stage for establishment of an air academy.

The role of the officer in the modern Air Force of today is one of importance. Quantity can no longer be substituted for quality. The Air Force must have within its officer complement not only the most aggressive, and the best qualified personnel available, but must have individuals whose careers are guided by Air strategy and enveloped by Air Force philosophy. Their careers must be . . . "the Air Force". For this loyalty and devotion to duty, the Air Force must be willing to ensure that potential skills do not go undeveloped, that ambitions are not thwarted and that opportunity for accomplishment and career progression is provided. *Aviation Education* must be put to work for it has the greatest power to elevate the level of talent and capability. The most important function that *available education* can perform is to make human experience available for use in career satisfaction of the individual officer and in the Air Force. *AVIATION EDUCATION* IS THE BULWARK FOR PEACE OR WAR.

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The Rôle *of* Air Explorers *and* Civil Air Patrol *in* Aviation Education

By ROBERT S. NALBACH
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Office, Deputy Chief of Staff for Operations
Headquarters Air Training Command
Scott Air Force Base, Illinois

As a former High School English instructor; assistant editor of a weekly house-organ newspaper and public relations director for the United Nations Relief and Rehabilitation Administration in the U. S. Zone of Austria, educational consultant for the Department of the Army, and currently serving as educational specialist, reserve affairs, Headquarters Air Training Command at Scott Air Force Base, Illinois, Mr. Nalbach views the problems in his article, and the inherent challenge to teachers, with something more than vicarious detachment.

Having seen at first hand war's devastation of Europe during the last war, Mr. Nalbach spent from August 1945 - November 1946 in writing for world-wide press associations articles and feature stories depicting one of the most sordid backwashes of the war: the plight of thousands of Ukrainian, Polish, Yugoslavian and Baltic displaced persons housed in former soldier's barracks throughout Germany, Austria and Italy.

Subsequently, he worked as Educational Consultant with the Troop Information and Education branch of the Department of Army in Europe, supervising the educational activities of about 5,000 American servicemen in schools throughout Germany and France.—Editor

ONE OF the significant statements of all time to me, was made by the famed British historian, Toynbee, who asserted: "History has shown that a nation eventually perishes as a result of an excess of its chief virtue."

The glory that was Greece, the splendor of Rome, the rise and devastation of Hitler's Germany, need no amplification here in historical substantiation of this truth.

As teachers—and parents—you may have been equally disturbed from recent reports and studies concerning the health of our youth, which revealed that the automobile and television have been instrumental in reducing the vigor of our young people to an unfavorable comparison with those of comparatively poor, war-ravaged countries. Are we guilty of undermining our nation by permitting our increasingly high standard of living to be disguised "booby traps" to the health of our youth? Is this the "excess" of our nation's chief virtue and thus our technological Nemesis?

The mission and activities of two organizations which are closely allied with the Air Force offer a partial solution to this problem. These organizations are the Air Explorers and the Civil Air Patrol.

The Air Explorers is a part of the Boy Scouts of America program which consists of training young men, 14 to about 18 years of age, in character building, citizenship training and physical fitness. The Boy Scout program, organized into twelve geographical regions of responsibility, is further divided into 540 local councils in the United States. Usually under the sponsorship of civic-minded organizations, Air Explorers have regular meetings which emphasize outdoor, social, service and vocational exploration programs. The

service program, as an example, stresses emergency training and preparation for emergencies in the home, community and nation. Outdoor field trips, visits to nearby Air Force bases to see movies and films on aviation subjects, and to tour bases for development of interest or exploration of vocational opportunities are just a part of the activities of this group.

But the greatest appeal Air Explorers has to young men is their desire for independence, and being treated as men. Youth definitely like to manage their own affairs, to have the freedom of making their own decisions. Young men resent being preached to, now more than at any other age. They would rather achieve their moral growth the hard way, in the rough and tumble of everyday associations among themselves.

To attract and hold young men, Air Explorers must meet many of their desires and needs. Now, briefly, just how does the Explorer program do so?

It gives them ideals, mature men's companionship and counsel, experience with democracy, leadership growth, vigorous outdoor activities, vocational leads, self discipline and world brotherhood. The simple, profound truths in the Boy Scout oath and law are a set of principles any person, young or old, can live by. They long have been and are the measuring rods of adult conduct.

Explorers gain experience in self government when they rely on their advisor for advice and do not expect him to run their program for them. They learn that the American idea of democracy means consideration of the minority's wishes in working out the will of the majority to be followed wholeheartedly by all.

A direct result of this practice in democracy is the development of leadership in Explorers. Every young man, as every perceiving teacher or administrator knows, has at least a little of it. Some have a lot. But every bit needs to be tried out, developed and encouraged. At the same time, leadership implies good "fellow-ship", and Explorers cultivates a young man's ability to cooperate with leadership for the common good.

This writer was privileged to attend an international workshop on the social studies, held in Heidelburg, Germany, in July 1950, and directed by Dr. Chris A. DeYoung, former Dean, Illinois State Normal University. Among the German teachers were several who had only recently returned from the United States after having spent one year, as exchange students, visiting, observing and studying the educational systems of our country.

Some of these exchange students had visited schools in as many as ten to fourteen states in all sections of America. During general conference meetings they were unanimous in their one major observation: what we *do* for our children.

One of these young teachers explained to me at dinner one night just what this experience had meant to him. As an ex-soldier, about 25 years of age, he had both read about and observed those qualities of initiative, resourcefulness and leadership of the American soldier which seemed to put him apart from others.

He was even more impressed by the conduct and bearing of an eight year old American boy whom he observed daily on the boat while crossing the sea to America.

"Before our ship docked at New York," he told me, "I was determined to try to find out what the American system of education contained which could develop, in such a few years, traits of poise, confidence, self discipline and independence as I observed in this young lad.

"I don't know for sure," he went on, "whether or not I have found the answer, even after visiting so many schools. I do know that I found further evidences of this same thing when, in some classes, the instructor might leave his room for a few minutes and the classroom activity continued just as though he had been in the room. Often a student would take charge. At other times, students would get up, use the dictionary, leave the room, return, use charts and maps at the blackboard all with the same independence and unconcern. This," he concluded, "would just not happen in most of the German schools I know, but I intend to use this as a goal in my own."

The Air Explorers has much to offer a young man in the area of vocational exploration. Among the hobbies and special skills in the program, those which touch on vocational fields are especially important. Young men, keenly sensitive to the overtones of reality, are thus stimulated in their thinking about how they will soon fit into the world of industry and labor. They are encouraged to investigate occupations that appear interesting. These first steps are *not* formal vocational guidance, but they are exploratory efforts toward a more intelligent choice of life work instead of drifting into a job. Furthermore, these steps point out that a successful, happy life is a productive one, achieved through working hard before playing hard.

As the radio, television, airplanes and atomic power continue to reduce the distances between the peoples of all countries, the need to reduce the differences in their understanding of each other becomes imperative. Belonging to the Scouting movement, and the Air Explorers, underlines the problem as well as outlines the steps toward its solution.

The Air Force and, in particular, Lieutenant General Robert W. Harper, Commander of the Air Training Command, are particularly interested in cooperating with and supporting this character-building program for the youth of our nation. Air Force officers and airmen at numerous bases throughout the United States are enthusiastically planning, advising and assisting in Explorer activities. Overnight camping trips, tours of base facilities, demonstrations in artificial trainers, briefs on weather forecasting, participation in Adult Training Institutes and actual flights in both conventional and jet aircraft are all providing dynamic motivation for these youth. Air Forces Bases such as Harlingen AFB, Harlingen, Texas; Sampson AFB, Geneva, New York; Greenville AFB, Greenville, Mississippi; Tyndall AFB, Panama City, Florida; Mather AFB, Sacramento, California; Scott AFB, Belleville, Illinois, among others, all have active, motivating and challenging programs. *The Air Explorers of these communities, born of the air age, nurtured in a society whose very existance is dependent upon airpower, are receiving citizenship training which will provide a solid bulwark for their responsibilities as citizens of our jet-age.*

Civil Air Patrol

The "big brother" of the Air Explor-

ers, and an organization which the United States Air Force also actively supports, is the Civil Air Patrol (CAP).

Founded just six days before Pearl Harbor, on December 1, 1941, the CAP consists of 77,000 volunteers who have joined together to serve their country and further national interest in aviation. CAP is organized into squadrons, groups and wings following the pattern of the Air Force. A wing headquarters is located in each of the 48 states and the United States territories.

The Air Training Command and other major commands of the Air Force provide facilities and training for some 17,500 CAP cadets, between the ages of 15 and 18, who attend a nine day summer encampment program every year at bases ranging from Elmendorf, Alaska, to Puerto Rico; from Griffis Air Force Base, New York to Hawaii. For nine days these cadets live alongside Air Force Personnel. They study regular aviation subjects, as pre-flight training, navigation, weather, mechanics and communications, along with military customs and traditions. As with Air Explorers, emphasis is placed upon physical fitness, outdoor activities, and health, as a necessary prerequisite to fly an aircraft. Vocationally, there is a thread of continuity also. If, as a result of exposure to aviation, and to the concept of a jet age, a young lad finds his interests budding in this direction, he may pursue this vocational area through CAP activities.

These activities are not solely training and study, however. CAP also fills another important rôle as an Air Force auxiliary. Through its senior members—Air Force veteran and private pilots—it is geared to an important civil defense rôle. It also works with the Air Rescue Service on search and rescue missions.

The CAP aviation education course is used in over 225 schools. The National Aviation Education Workshop for teachers, scheduled to be held in July, is sponsored annually by CAP.

World conditions in recent years have slowly forced us to realize the importance of an adequate defense system for America. We are now less prone to say "It can't happen here" than we were a few years ago. To be successful, this defense system must acknowledge the dependence upon the tools and instruments of war just as much as it relies upon the moral, spiritual, mental and physical health of the men who operate these machines.

Through orienting, educating, training the youth of America in Air Explorer and Civil Air Patrol activities—"Air-conditioning," so to speak—we are laying the foundation for a strong civil and military structure in the years to come.

"But what can I do?" you may ask. "I am a high school English (math, science, history.....and so forth.....) teacher!"

First, personally explore the opportunities to become "Air-conditioned". Ask your Boy Scout leaders for information concerning current programs in your locality. These leaders will not only appreciate interest expressed in their programs but also offer possibilities of incorporating dynamic projects into your classroom activities.

The potentialities are limitless: building aeronautical equipment..... models of airplanes, hangers, beacons and motors; dramatizing major events and developments of aviation history; vitalizing the teaching of arithmetic and mathematics in computing rates of speed, gas consumption per hour, arriv-

al times based upon speed and distance; development of technical vocabularies; tours to the weather bureau, aeronautical industries, observatory, radio station, Air Force bases and civil air defense units; writing of stories and articles on aviation personalities; reading biographies, scanning newspapers and periodicals for air news and developments; making scrapbooks, to name but a few.

Obviously the sky is the limit! The challenge is there. Will you accept it?

CHILDREN'S BOOKS

Reviewed by PAUL ZANKOWICH
Teacher, East Meadow Public Schools
(On Military Leave)

The House of the Fifers. By Rebecca Caudill. Decorations by Genia. N. Y. Longmans, Green and Co. 1954. $2.75.

It most certainly was not at the house of the Fifers, her intimate relatives, that fifteen-year old Monica wished to spend her summer vacation. Five years ago, she rather liked the Kentucky farm and her cousin Nancy, but now Nancy's letters were full of the accounts of dull 4-H projects and the country seemed to Monica a dreadful bore for a whole summer. And so it began to be, until Nancy made certain adjustments. With the guidance of her wise old aunt, and motivated by a desire to gain the approval of her older cousin, Corkey, Monica entered into the life of the place. How she faced some rather perplexing problems makes a grand story.

One Against the Sea. By Betty Morgan Bowen. Decorations by Arthur Marokvia. N.Y. Longmans, Green and Co. 1954. $2.75.

One Against the Sea is a story of a young American and his courage, of a fight against overwhelming odds, and of a victory that brought happiness and achievement in a new land. Bill, an American lad, had left his homeland to take up a new life in a little Yorkshire fishing village. Almost from the very day of his arrival in the village, he seemed to get off on the wrong foot with the lads of the community. But the course of events, and the ever-raging sea, gave him opportunities to win the respect and the affection of the good Yorkshire people and of their sons.

Engineers' Dreams. By Willy Ley. Illustrated by Isami Kashiwagi. Diagrams and Maps by the Author. New York. The Viking Press. 1954. $3.50.

Engineers' Dreams is an exciting book and one that has an especial appeal for men and for high school boys. It tells of things that engineers *can* do but which *cannot* be done for reasons that have nothing to do with engineering. Willy Ley vividly describes the idea of building a tunnel beneath the English Channel that would provide a dry-land link between England and the Continent; the vision of a floating platform, or "island," in the middle of the ocean where planes could land to refuel or to outwait a period of bad weather; the dream of putting volcanoes and hot springs to work to drive engines and to heat cities; and the project of blocking the great Congo River and creating a huge fresh-water lake in the Congo Basin as a means of easy transportation. Ley goes on and describes almost unbelievable projects that are within the capabilities of engineering science and he points out the reasons why, to date, these dreams have not become realities.

The Importance *of* Aviation Education *in the* Elementary *and* Secondary Education

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Dr. Mervin K. Strickler, Jr., serves on the staff of Major General Lucas V. Beau, National Commander of Civil Air Patrol, as aviation educationist.

He was graduated from Clarion State Teachers College in Pennsylvania and completed his graduate work at Stanford University where he became one of the first individuals to obtain a doctorate in Aviation Education.

He has served as the director of aviation education workshops at the University of Puerto Rico and the University of Colorado.

He is a member of the Board of Directors of the National Aviation Education Council and the University Aviation Association.—Editor

IN 1954, a year after the commemoration of the momentous achievements of the Wright Brothers, educators and laymen alike must pause to consider the next 50 years.

Aviation Affects all of us

Aviation has had a profound influence on the lives of men, women and children in America and, in fact, on people throughout the world. For example, it is now almost platitudinous to state that we no longer live in a geographic area apart from other geographic areas of the world. American citizens fly around the world on regularly scheduled airlines in a matter of hours. Jet airliners now make it possible to say that we are living in a 24-hour world, i.e., no part of the world is more than 24 hours away from any other.

Air Power Defined

One may well ask, "What does all of this mean for me as a citizen?" "What does all of this mean for me as a teacher?" To answer these questions, a definition of air power should be noted. John C. Cooper of the Institute of Advanced Studies at Princeton, in his publication "The Right to Fly", definies air power as follows:

"Air power in its simplest terms is the ability of a nation to fly, to act through the airspace, to use controlled flight, such, for instance, as the flight of aircraft. It is part of national power, available at home or abroad, in peace or in war, to provide transport through the airspace. Though its transport uses are both military and civil, air power is basically indivisible. The armed forces represent but one use of air power. Civil and commercial aviation are supported by and spring from the same elements."[1]

Clearly, one cannot divorce the military from the civil facets of aviation insofar as total air power is concerned. The implications for our schools of both civil and military aviation are practically one and the same.

World War II Aviation Courses

One lesson that the military as well as those in education learned during the last war was that it was impossible

1 COOPER, John C. *The Right to Fly*, Henry Holt & Co., New York, 1947, pp. 11-12

to cram a lot of technical and highly scientific information into a so-called "Pre-Flight Aeronautics or Science of Aviation" course. The research done by the American Council on Education, the Civil Aeronautics Administration, and the United States Air Force, coupled with what is common sense knowledge for all of us, indicates that you simply cannot expect the human mind to retain a wealth of technical facts through education via lecture and memorization. Do not misunderstand, our World War II experiences with high school aviation programs did much to stimulate an understanding and an awareness of the importance of the airplane for the curriculum on all levels of education—elementary, secondary and higher. Experience with the World War II effort has shown, however, that it stops far short of our needs; in other words, it is not good enough for our youth today.

Aviation Education is General Education

Aviation education is general education as it concerns aviation, as distinguished from technical or special education. In other words aviation education embraces all the knowledge and attitudes that the informed air-minded citizen of today should have. It includes, for example, an understanding of air power in a sense similar to that already cited.

Aviation Education in Elementary and Secondary Schools

With an understanding of the term "air power" and a realization that general education rather than technical or special education is the first consideration for both elementary and secondary schools, a further question arises concerning how schools can relate their offerings to both civil and military aviation. Actually, the schools can serve the needs of aviation by producing graduates who have the basic tools—who can read and write — and, above all, graduates who understand the world in which they live, conditioned as it is by the airplane; graduates who realize, for example, the tremendous geographic impact of the airplane on our society. The most succinct statement available in this regard is that which the Aviation Education Committee of the American Association of Colleges for Teacher Education listed in their 1949 report. American schools can best help accomplish the needed aviation education if the schools will give to the pupils what the above group feels should be given to the teachers. The Committee feels that teachers should have (the writer would say that students should have):

"1. An adequate reading and speaking vocabulary of aviation.

2. Knowledge of the importance of weather and climate to successful aviation.

3. A general knowledge and understanding of airplane structure.

4. A general knowledge and understanding of the simple scientific principles of flight.

5. An understanding of the place of aviation in peace and war.

6. An understanding of the effects of air transportation on various levels of international relationships.

7. An introduction to the social, economic and political implications of current and future aviation development.

8. An appreciation of the services rendered by airports and their associated personnel.

9. Familiarity with existing and needed basic governmental services, regulations and relationships in aviation.

(Numbers 10 and 11 would apply for teachers but not for students.)

10. A knowledge of available aviation education resources in materials, personnel and equipment for instructional purposes.

11. The know-how for organizing units of aviation education and providing resulting learning experience for children through student or directed teaching.

12. A realization of the growing interdependence of people through aviation.

13. An understanding of problems —political, economic, international and social—that aviation has created and the institutions society has established to solve these problems.

14. A realization of how the airplane has changed geographic relationships—particularly in terms of mankind's concepts of time, place and distance and mankind's attitudes toward waterways, land masses and land and water barriers."[2]

In short, the schools of our nation should give American youth at least the minimum points indicated above. Whether or not this is done in an elective course such as that which Civil Air Patrol is encouraging or whether it is done through sound educational methods of integration or correlation is really incidental. The important thing is that it be done. Local wishes, interests, and community needs will, in the final analysis, determine whether or not there will be an elective course or aviation education of any kind.

The implication of both civil and military aviation for our schools is one of *general education*. It is aviation education aimed toward the development of well informed, air-minded citizens. This must be done, regardless of whether or not the high school graduate goes on to a technical career in either the military, industry, or civil aviation, or whether he uses his knowledge and attitudes in exercising his all-important prerogatives as an informed member of our great American electorate. With a sound program of aviation education in our schools, the various problems facing both military and civil aviation will fade before an enlightened public opinion that will not rest until aviation problems are successfully resolved.

There have been many aviation education projects over the past twenty-five years. All too often, however, the results have been rather limited. Not infrequently, the reason for the limited effectiveness of any given aviation education effort has been the lack of an adequate follow-up program. Civil Air Patrol, in many communities, provides the necessary impetus and follow-up for aviation education projects such as teacher training workshops. Civil Air Patrol members in over 200 communities throughout the 48 states, District of Columbia and the territories (Alaska, Hawaii, and Puerto Rico), cooperate with local high schools by helping the schools offer an aviation education elective in the curriculum. Often, Civil Air Patrol loans the necessary textbooks. instructor's guides and helps to arrange visits to airports and other field trips. Sometimes, too, Civil Air Patrol arranges an orientation flight for the high school students in the program. Since there are Civil Air Patrol members in

2 Report, Aviation Education Committee, American Association of Colleges for Teacher Education, 1949.

over 2,000 communities, there is much room for expanding the program in cooperation with local schools.

What Aviation Education Offers the School

Thus far, we have concerned ourselves with what educators in the schools must do for aviation. Let us now consider what aviation can do for the schools. There is no area of the curriculum that is devoid of possibilities for integration of significant aviation facts, information and experiences. The music teacher, the art teacher, the science and social science teacher, the mathematics teacher—to name but a few—all have rich opportunities to enliven the learning experiences of their students. More important, students, as many parents and teachers have discovered, are generally quite well informed about aviation and are frequently intensely interested in it. Thus, the alert teacher, whether elementary or secondary, can capitalize on this interest and guide the experiences of the student in a way which will make him a better citizen.

There are many sources of materials and information concerning aviation education for teachers. Most of the airline companies, for example, have usable teaching material available. In addition to the actual classroom material, most airline companies and the aviation industry will provide resource personnel for guest lecturers in the classroom. Further, airlines, the aviation industry, and governmental agencies welcome field trips from school people providing they are carefully planned in advance and related to genuine learning experiences. Actually, the problem facing the teacher who wishes to do something about aviation education is not "What will I do?" but rather "What, of the many possible opportunities facing me, will I select for my grade level, curricular area, and particular group of students in the community?"

One may rightly ask at this point, "Just what does aviation education have to offer schools in general and the community and the nation in particular?" The answer to this question is clear.

In the free society which we enjoy in America, no development—aviation or otherwise—can be accomplished without the support and cooperation of all American citizens. Such support and cooperation necessarily implies understanding. The understandings about the airplane necessary in 1954 clearly point to the necessity for general education regarding aviation aimed toward the end of developing better informed and air-minded citizens. THIS IS AVIATION EDUCATION

All of us in education—elementary, secondary, higher, and adult—in the aviation industry, in airline companies, and in government and the military must pool our resources to accomplish mutually held objectives. Organizations such as the Civil Air Patrol must be encouraged to do their part in educating Americans, both young and old. With the concerted efforts of everyone in aviation and education aimed first toward developing an understanding and awareness of aviation through aviation education, the other problems of aviation such as both military and civil procurement of technically trained personnel along with an adequate aviation industry, civil air network, and aeronautical training facilities will cease to exist.

American air power policy determination is the responsibility of every mem-

ber of the American electorate. Our air power policies will be adequate to the degree that American citizens are aware of the many elements that are included in the concept of air power.

The man on the street—the voter—determines what air power we will have. If the voter is a well informed, air-minded citizen our air power will be adequate. He will not permit it to be otherwise. The schools have a definite responsibility for citizenship training in regard to understanding the airplane and all of its ramifications. Programs of aviation education suitable to the interests and needs of all levels of education must be continued where already in existance and started where they are not being carried on at present. Specific details regarding what type of aviation education is best must await the considered judgement of school administrators, teachers, parents, students, and all community interests. The important point is that aviation education must become an important part of education at all levels—elementary, secondary, and higher. It should be emphasized here that aviation education does not mean technical or special training such as pilot or mechanic training or aeronautical engineering. These are all very important functions of a special nature. Aviation education is the general education that all alert citizens must have to solve the huge problems thrust upon us by the advent of the airplane on the 20th Century scene.

The scope of aviation education touches upon nearly every subject that we ordinarily think of when we think of a curriculum. Thus, aviation education is both a part of many of the areas of study or academic endeavor that we include in our schools and colleges and an area of study itself.

The challenge before us is clear. The Wright Brothers ushered in the first half of the 20th Century with their achievements of controlled, powered flight with its consequent developments during the past half century. The very survival of the free world during the next half century may well be dependent upon our ability to cope with the problems thrust upon us by the airplane. Aviation education will help us solve these problems.

As we look forward to the latter half of the 20th Century, it is apparent that a two dimensional education will not suffice for a three and even four dimensional world. The airplane is a potent weapon of *de*struction. It may also be used as an exceedingly effective tool for *in*struction.

If education is to aid in changing the behavior of man-kind to the end that America and the free world will not be wiped out by an atomic or thermonuclear aerial war, and if we are to develop the airplane to the point where it will aid all of us for peaceful pursuits, we must do much more than just talk about aviation education. We must have it. Herein lies the importance of aviation education for elementary and secondary schools.

The San Jose State College "Off Duty" Program *at* Parks Air Force Base

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Dr. Ouellette, a native of Canada, has spent most of his life in The United States where he graduated from San Francisco State College in 1940. He has taught in the Madera County schools and Fresno State College. During World War II he served as an officer in the U. S. Navy. Following his release from the Navy he continued his education at Stanford Graduate School of Business and received a Master of Business Administration degree. After an interval of teaching he returned to Stanford University and completed his Doctorate of Education in 1951.—Editor

THIS ARTICLE is concerned with a specialized "off-duty" college training program sponsored by the San Jose State College at the Parks Air Force Base. It is the author's hope that the information presented will prove helpful to other colleges or bases planning a new program of this type or as a basis of comparison for presently operated programs.

Included in this paper are discussions of: the "off-duty" requirement, why and how the program started, the courses offered, how the potential student is informed about and started in the program, the weaknesses and strengths of the program, and the results of the program to date.

Why and How the Program Started: The Parks Air Force Base was activated on 1 August 1951. At that time the mission of the base required a large number of instructors for the training of new Air Force personnel. The first Base Commander, Colonel Carter, immediately saw the need for college level courses that would increase the proficiency of the base instructors in techniques of teaching and in subject matter areas. Since base instructors and college professors had full daytime schedules, the planning for the college level program evolved into an "off-duty" activity. The location of the Parks Air Force Base, in relation to colleges and universities of the area, severely tested the feasibility of such a program. The nearest institutions of higher learning, the University of California and the San Jose State College, were thirty-five miles away. The dilemma of transporting a large group of men to a campus for classes, or of transporting several college professors to a base was resolved on the basis of economy. Thus the "off-duty", "on-base" program got the approval of the Base Commander.

Mr. Carlton S. Stevenson, Civilian Education Advisor, was asked to negotiate with the colleges and universities of the area; and, after careful investigation, the San Jose State College was given a closed contract for the balance of the fiscal year 1952, and for 1953. In brief, the contract stipulated that the College offer undergraduate courses at the base for a fee of four dollars per quarter unit; and that residence credit, with full transfer credit or full credit toward a degree at the San Jose State College be granted. The Air Force agreed to provide transportation for the professors to and from the base, to publicize the courses at the base, and to

sanction the closing of any course that did not reach an enrollment figure of fifteen.

Within the terms of this contract, the "off-duty" "on-base" program started on 25 January 1952; and, to everyone's surprise, thirteen courses materialized with 280 students enrolled. In addition to the base instructors—for whom the program had been designed—there appeared base civilian personnel, Air Force trainees, and many civilians from adjacent communities. Thus the pattern of the program was set: a service primarily to the base instructors, but available to anyone interested in higher learning.

Courses Offered: During the two year period a fairly definite pattern has developed in course offerings. It has been found that three or four general education requirements per quarter meet the demand of Air Force personnel who desire to start a college program. These general education courses are usually required at all accredited colleges in the United States and are in the area of English, History, Political Science, and Psychology. The rest of the course offerings for a given quarter are usually in specialty areas of Police Science, Education, Foreign Language, or Business Administration. The College will, in addition, offer any specific course for which a demand exists and facilities of the Base permits. The following courses have been the most popular during the last two years:

Economics 1A—Principles of Economics

English 1A—English Composition

History 149A—History of Russia

History 17A American History and Government

History 17B—American History and Government

Political Science 120—Public Opinion and Propaganda

Psychology 5A—General Psychology

Psychology 5B—General Psychology

Psychology 150—Educational Psychology

Psychology 154—Social Psychology

Psychology 139—Dynamics of Personality

Psychology 110—Abnormal Psychology

Spanish 10A—Elementary Spanish

Speech 2A—Public Speaking

How the Potential Student is Informed and Started: The Base Education Office arranges to have a news story about present and proposed courses in the weekly base paper "The Gateway News" and also in the daily "Parks News Bulletin". In addition, the Civilian Educational Advisor attempts to reach and tell new base personnel about the educational opportunity during the induction period. The San Jose State College Public Relations Office forwards news releases regarding course offerings to newspapers in the area of the Parks Air Force Base, and the Extension Services Office of the College sends announcements to all the schools in the vicinity of the Base. These various devices have been most rewarding in attracting students to the classes.

Military personnel evidencing an interest in college courses are invited to the Base Education Office. High School and College Level General Educational Development (G.E.D.) tests are given to these prospective college students; and, after the tests are completed, the Educational Advisor talks with them regarding their educational plans. If a candidate shows promise of benefiting from a college program, the Educational Advisor certifies participation in "Op-

eration Bootstrap"* The candidate then pre-registers for the courses he desires and his college training begins. Men with previous college training are invited to file transcripts and military records with the Admissions Office of the San Jose State College. When these are assembled and evaluated the student is notified as to his standing at the college.

Base Civilian personnel and civilians from adjacent towns sign up for courses at the Base Education Office. Forms are provided if they desire college credit or seek admission to the San Jose State College; but they must complete admission procedures at the campus.

Weaknesses and Strengths of the Program: In a hundred year period, the San Jose State College had developed rather inflexible administrative procedures with regard to its present seven thousand student population. At the outset of the Parks Air Force program many office relationships were severely strained; but with patience and understanding, and two year's experience, most of these problems have been overcome. Two problems deserve special mention: admissions and counseling.

Many problems arose immediately after the start of the program in the area of admissions. Many experiments were tried during the last two years to formulate an equitable policy in this regard. The College's latest statement of policy for personnel on active military duty in the Parks Air Force program is as follows:

1. The College will require full matriculation. This includes the filing of complete official transcripts of all previous high school and college work and acceptance for admission by the Admissions Office.

2. The College's military evaluation will be based on DD Form 295, "Application for the Evaluation of Educational Experiences During Military Service," and/or certificates of completion from military schools.

3. The College will not issue a transcript which includes the military and/or transfer credit to another institution until the student has done residence work on the San Jose campus. The College is willing, however, to issue a written statement of credit it has allowed.

During the first year of the program it was found that many students required the services of a college counselor in long range program planning, admissions procedure, and evaluation of previous academic work. The Extension Services Coordinator of the College spent several days of the first two weeks of each quarter at this task. This year, in addition to the first two weeks, the Coordinator spends an entire day at the Base Education Office through the entire quarter. Also, the Coordinator is able to take unanswerable questions back to the campus for further investigation. He is able to confer with the Admissions Officer, the Registrar, and occasionally will take difficult problems before the Personnel Committee of the

* "Operation Bootstrap" is the Air Force off-duty education program which is designed to offer encouragement and assistance to Air Force personnel in completing requirements for a high school diploma, a college degree, or for career advancement and general academic self improvement. Under this plan the Air Force pays 75 percent of the total cost of tuition. Also, under this plan, Air Force personnel can request full time temporary duty for a maximum of six months to complete the requirements for an undergraduate or graduate degree. If such a request is approved, the applicant spends the six months in residence at the institution. Pay and allowances continue during this six month period.

College for appraisal and decision. In some cases the student is invited to the campus for specialized counseling. In this event the Extension Coordinator arranges interviews with Division or Department Chairmen in advance of the visitation; thus many hours are saved for the student unfamiliar with "office hour" schedules of busy college executives. The combination of these various techniques usually gives the students fast service and authoritative answers.

Results from the Program: The total effect of the program is difficult to analyze, but several parts are obviously important: the number of men participating, the number of men matriculating, and the number of men completing the college program. Also of interest is the extracurriculum.

The total number of military personnell enrolled since the program started is 1575, or an average of 225 each quarter. Eighteen former Parks Air Force men are presently enrolled at the San Jose State College on a full-time basis. During the past two years six former Parks Air Force men have earned the Bachelor of Arts degree, and one the Master of Arts degree. Several career Air Force personnel have taken advantage of the "Operation Bootstrap" temporary duty assignment to complete the baccalaureate degree.

Of non-academic interest, but highly interesting, was the desire of many enrollees in off-duty courses to participate more fully in the extra-curricular activities of the college. Hence, the Associated Students made available to the Camp Parks students a half-price student body card. This card entitled the buyer to attend athletic and social events sponsored by the College. Of course the privilege was fully utilized during the football season when San Jose State played the University of California, Stanford University, the University of Idaho, the University of Oregon, Brigham Young University, and the College of the Pacific. Naturally, many Air Force blues were in evidence at the dances and other social events of the College.

Conclusion: The Parks Air Force program is noteworthy since it has interested a segment of our youth in higher education. Because of its short history, it can be called an experiment. The experiment has proved gratifying to Air Force and College officials alike, since it has shown that an area of common interest exists between the militarists and the educationists. In sum, the experiment has the approval and support of the top administrators of each agency; effective communications between college and base officials have been established; and with patience and understanding for the other's problems, mutual respect has developed over the two year period.

Aeronautical Research *for* Post Graduate Students

Wide Scope of a Unique United Kingdom College

By E. COLSTON SHEPHERD
Aviation Editor of the London "Sunday Times" and Commentator on aviation affairs

Mr. Shepherd was aviation editor of the London "Times" for eleven years, beginning in 1928. He was editor of "The Aeroplane" for four years, and chief air correspondent for the British Broadcasting Corporation during the invasion of Europe in World War II.

He was for six years Secretary General of the Air League of the British Empire, and is now aviation editor of the "Sunday Times."

With the Royal Air Force he took part in some of the earliest experiments in dive-bombing. He flew in R.A.F. aircraft on many exercises, and reported Schneider Trophy races. In commercial flying he flew in 1938 in one of the first flying boats to make the journey to Sydney, and in 1950 he made a long flight in the first Comet jet liner—Editor

UNATTACHED and unrelated to any university, the College of Aeronautics, at Cranfield, near Bedford, in Southern England, is unique in that there is probably no other similar establishment where students themselves undertake original work in aeronautical experimentation and research. Several universities in Britain make provision for post-graduate work in aeronautical subjects, but none has the comprehensive equipment assembled at Cranfield. The College, run by Britain's Ministry of Education was started seven years ago and provides two-year diploma courses.

The aeronautical department of the University of Illinois is believed to be moving in the same direction and has sent representatives to inspect the system and equipment at Cranfield. The California Institute of Technology at Pasadena has elaborate apparatus, but this is engaged mainly on work for the United States aircraft industry and is not primarily at the service of students. Cranfield provides apparatus which is beyond the financial resourses of a university and gives students both a basic training in all aspects of aeronautics and also full scope for specialization.

Students spend their first year studying aerodynamics, aircraft design, propulsion, economics and production, and electrical engineering. In their second year they specialize and are engaged on thesis work in their chosen branch. Throughout the course the students also act in teams on aircraft, engine and production tasks. Aircraft design and engine design on advanced specifications are dealt with as live projects, each man being made responsible for all the design and stress work of a particular part. The thesis work may be theoretical or practical but each is individual and is concerned with some hitherto unsolved problem.

Novel Work

In the current year, for instance, one engine specialist is studying, with the

aid of electric furnaces and stress gear, the creep of turbine buckets at abnormal temperatures. His object is to contribute some useful original knowledge on the design of an expendable jet engine. An electrical specialist is engaged on the preparation of a 600-way automatic recording and plotting electronic strain-gauge unit. Much of the work being done by aerodynamics specialists is novel, and the aircraft design entrusted to the design students of the senior year concerns forward-swept wings in a most unusual and again novel application.

Not only must the student take his part in the economics section in planning manufacturing processes and organizing the requisite jigs and tools, he must also turn his special design in the electrical department, for example, into a neat and tidy instrument suitable for installation in aircraft. On the engine side he must take his turn at the test beds and possibly in the rocket-testing house. In the air, he gains some experience of the methods by which test pilots arrive at their conclusions and accumulate data to supplement wind-tunnel research. One of the College's aircraft has a swept-back wing set vertically on the fuselage so that full-scale observations may be made in flight.

Cranfield, formerly a Royal Air Force station, is fully equipped with radar and other landing aids. It is used regularly by British European Airways for pilot training and occasionally by Pan-American Airways for training pilots in instrument techniques.

All the attributes of a self-contained college community are to be found in this center, established generously by a Ministry of Education which has never, until recently, embarked itself on post-graduate education. The College has 120 students who come from all parts of the world. Most of them are civilians destined to work in industry but some Service officers, including four from the United States Forces, are sent on every course. These are presumably intended to make their careers in those branches of the Services which prepare specifications or are concerned with research or with test flying. In so technical a subject, language difficulties have been found a handicap on occasions. One French-Canadian even had to make a special study of technical English.

Aerodynamics Equipment

In the aerodynamics department there are five low-speed wind-tunnels with the usual balances, three smoke tunnels and three high-speed tunnels. One of the latter can be used for tests up to a Mach. number of 2.5. It absorbs 1,000 horsepower. Another is to use freon instead of air which, when applied to powered tunnels, will be much more economical of power at high Mach. numbers. The biggest of the low-speed tunnels, recently completed at a cost of £130,000 ($364,000), has a working section of eight feet by six feet and is driven by a 500 horsepower electric motor. It is made entirely of wood except for the corner vanes which consist of alloy sections bonded together. Wood was chosen for the main structure because of priority claims for steel, and an excellent job has been made of it, particularly where the form changes from the octagonal to the square within about four feet of length and where double curvatures are accomplished in 11-ply. This big and expensive low-speed tunnel may, at first sight, appear to be a luxury in these days of increasing speeds, but

the view in Britain is that much work with new aircraft forms will need to be done, especially in relation to interference between wing and fuselage at take-off and landing speeds.

All the usual instruments for measuring velocity, presure and turbulence are in use. There is also an hydraulics laboratory with various open channels for the study of flow patterns. In the dynamics laboratory there is a whole range of electronic apparatus for experimental research in vibrations of frequencies from one to 10,000 per second.

Fatigue Testing Gear

Almost as much apparatus is at the service of the aircraft design department, for this includes gear for fatigue testing and drop testing as well as for strain-gauge work. The department contains complete sections of modern wings. It has for instance a big section from a Valiant bomber. It has a collection of instruments, of automatic pilots, of de-icers, of fire-prevention gear, examples of aircraft electrical systems and a decompression chamber for testing instruments at heights up to 60,000 feet. For purposes of structural analysis and loading demonstrations it has in one big hanger a remarkable assembly of United States, British and German aircraft from the four-engine type down to the Me. 163 rocket fighter. It possesses, too, a Sikorsky helicopter which is used for vibration studies, being run for this purpose inside a cage on the airfield.

With the help of this apparatus the student becomes acquainted with all the intricacies and difficulties of design and has at his service representative examples of how other people have solved their troubles. When he is engaged on his own particular piece of design, he has his points of reference not only contained in the designer's handbook but also in actual specimens in laboratory or hanger. He can conduct experiments directed to the elucidation of specific points and bring his own results back to the drawing board.

V-2 Rocket

The aircraft propulsion department is equally well-equipped. It has specimens of many types of engine. There are modern piston engines and several types of gas turbines. There is a good selection of rocket motors and one complete V-2 rocket. Special rigs have been set up to permit investigation of the combustion side of gas turbines and ram-jets, and there is ample provision for taking dynamic stress measurements, for vibration observations and for conducting tests on fuels. In much the same way, the electrical department covers the whole field from generators, exciters and serve-mechanisms to the most advanced radar devices and affords the practical student full opportunity for working out his ideas.

In organizing the economics and production department, the College has again taken great trouble to enable students to deal with the actual work as well as to study the principles. Performing the theoretical work of planning a piece of production is married with motion study in which students themselves do the manufacturing jobs, hold the stop-watch and operate the camera. At the other end of the scale, they go through the motions of forming a company, holding board meetings, raising capital, ordering jigs and tools and organizing the factory for a specific piece of production. At every step they come into contact with the latest in-

dustrial, commercial and financial systems.

This College costs about £350,000 ($1,020,000) a year to run. In time it may be integrated with other post-graduate colleges to form a federalized technological university. Meanwhile there may be founded at Cranfield new institutions other than aeronautical dealing with advanced technology in such subjects as fuel technology, agricultural engineering, management and work study, wind power technology, machine-tool engineering, gas turbine engineering and others not yet adequately covered by university faculties.

BOOK REVIEWS

Public Opinion and Propaganda. Edited by Daniel Katz, Dorwin Cartwright, Samuel Eldersveld, and Alfred McClung Lee. N. Y. The Dryden Press. 1954 $6.25.

The increasing attention given to the study of communcations, and more especially to the crystallization of public opinion and the analysis of propaganda, is an encouraging trend throughout the colleges and universities of the country. This volume, a book of readings edited for the Society for the Psychological Study of Social Issues, will fill a long-felt need in its field. It is an extensive volume of nearly eight hundred pages, but it is one that gives ample opportunity for students to exercise their critical faculties. There is a wide coverage of points of view, of types of studies, and of issues. Major positions on debated questions are given so that students will have the opportunity to become familiar with both classical concepts and the more recent empirical advances.—WILLIAM P. SEARS

Elementary Economics. By John Nordin and Virgil Salera. N.Y. Prentice-Hall. 1954. $5.95.

This college text, now in its second edition, centers around the development of responsible citizenship. The relation of each topic in economics is presented in the light of its effect on the decision-making of individuals and groups. Central concepts of economics and the meaning and importance of national income are covered early in the volume and from this background the student is led to a consideration of new principles. The revision features new material on national income, prices, wages, banks, economic stabilization, social security, and international economics. The book is logically developed and the writing clear and stimulating.—WILLIAM P. SEARS.

Your Child and His Art. By Viktor Lowenfeld. N.Y. The Macmillan Company. 1954. $6.50.

Whenever Viktor Lowenfeld writes on art and with especial reference to children, readers may be sure of a sound, balanced, and forthright presentation. The present volume is offered as a guide to parents and it actually comprises answers to questions the author received from parents over a period of some six years during which Dr. Lowenfeld has been lecturing throughout the United States on the subject of the child and his creative expression through art. The answers are based on Dr. Lowenfeld's wide experience in the field, on research, on studies of case histories, on teaching experience, and on close observation of children of different age levels and different stages of development. Among the questions asked and answered are: "Why does my child always draw airplanes?" "Why does my child draw a house as if you could see through it?" "Why does my child draw out of proportion?" "Why does my child draw things upside down?" "Why doesn't my child want to work in clay?"—and a host of other such questions that have given concern to many parents. The author, in addition to answering these questions in terse and pithy paragraphs, discusses the parents' role in the growth of the child in his art experiences. There are numerous illustrations of the art productions of children and of children participating in art activities.—PAUL ZANKOWICH.

Quality Control *of* Air Force Training

By MR. DONALD M. BETHEL
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Training Ananlysis and Development Division
Sheppard Air Force Base, Texas

Born in Wisconsin and reared in Iowa, Mr. Bethel spent several years in public school administration in Illinois before the Air Force sent him to Texas in 1941. He holds degrees from Parsons College, Iowa, and the University of Illinois, with additional graduate work at the University of Chicago. In his present position, Mr. Bethel is concerned with improvement of curricula and training materials for technical courses conducted at Sheppard Air Force Base, Texas. Some of his training philosophies are reflected in the Air Force Manual "How to Instruct" and in some of the USAF Extension Courses.—Editor

AT THE VERY least, it's nice to be told that we Americans have the fastest and best airplanes, the greatest aircraft production potential, the most skillful pilots, the best aircraft and engine mechanics and the finest facilities for aviation education in the whole world. We claim these advantages by virtue of our inherent Yankee ingenuity, a normal knack with anything mechanical, and our inborn inventiveness.

By the way, who is it that tells us how wonderful we are? Do they, likewise, provide assurance that the United States will remain in this pleasant position of world leadership? Some of us who become nostalgic when we think of dark curly hair, remember that our Nation has not always been first in either military or non-military flying.

We recall that in 1925 a World Survey of Commercial Aviation showed this country being "out distanced by all other important nations" with greatest developments in Great Britain, France, Germany, Italy, Belgium, Netherlands, Denmark, Sweden, and Russia.

We are reminded that the jet engine, automatic fire control, the Snorkel submarine and radar, all essential elements of our present system of defense, were invented and developed outside the United States.

News releases tell of industry's requirement for 35,000 engineers and 5,000 scientists—not available. It is stated that Russia will graduate twice as many scientists and technicians as we will in this school year and their advantage in the field of engineering is three to one!

Aviation education is being characterized as the "backward child of our school curricula."

Let's not be so smug and complacent! The future of our civilization is still dependent upon the outcome of that "race between education and disaster!"

Without choice or voluntary action, the common citizen of every nation on earth, including our own United States, is subjected to the manifold influences of the air-atomic age. We have good reason to believe that with little or no warning John Q. Public (or Hans, Jean, Pedro, or Mehilovich) may be deprived of his unalienable rights to life, liberty and the pursuit of happiness or

anything else. We have an obligation to provide him opportunity to learn the facts of every day life. Today's facts of every day life include such modern concepts as those which concern aerodynamics, theory of flight, principles of piston and jet power plants, rocket propulsion, the application of radio and radar to the control and detection of flying, self-preservation in the event of atomic attack, the potential of bacteriological and psychological warfare, and requirements for civil defense against panic.

For continuance of its existance, a Democracy is dependent upon an informed citizenry.

Today in the United States, our citizenry is uninformed on the air-atomic age. Aviation education is not only backward, it is underprivileged! It has been estimated that within more than 90% of our public schools, aviation education does not exist. Curriculum change has failed to keep abreast of developments in our way of life.

Perhaps for purpose of discussion we may agree that there are at least two rather clearly defined categories of aviation education. First, there is the universal requirement for EDUCATION designed to provide understanding and to develop appreciation. Dispersal of this knowledge for the advancement of our civilization is a proper function of our public schools. Second, there is an increasingly urgent requirement for TRAINING in the various specific skills of the air-atomic age. It is the business of specialized technical schools to develop the skills, encourage the attitudes and provide the background knowledge and understanding necessary to effective job performance. The services of these Technical Schools, essential in peace time, become vital to our very existance during periods of national emergency. Each one of us owns stock in these schools. Let's examine our holdings in "Aviation Education, Inc."

Formalized training of ground personnel to service and maintain aircraft was first established during World War I under a curriculum which recognized the need for specialization to qualify some of the graduates for aircraft maintenance and others for engine maintenance. While the "Jenny" and the "Spad" (now historic airplanes) were relatively simple in construction, graduates of this first formal training program were expected to perform any and all necessary maintenance and repair up to and including modifications of the aircraft or complete overhaul of the engines.

As reported by some of its instructors, this original aircraft technical school was organized into administrative units strikingly similar to the common pattern of present day aircraft mechanic courses. Through intervening years, phases and branches have been added to provide training on new equipment. Sequence and time allocations have been changed from time to time. New subject matter has been introduced. Some objectives have been modified. Despite these changes, the essential elements of the curriculum appear unchanged. Aircraft mechanic courses remain today what they have always been—a logical grouping of subject matter within administrative units of convenient scope and duration.

In its earliest years, the aircraft mechanic course was planned and conducted by "practical" men. These men were technically qualified by experience before they became concerned with training. There is little reason to be-

lieve that they were aware of anything so abstract as a philosphy of training, yet they set the present pattern for course curriculum. Even if it should be contended that the early curriculum was designed to philosphical or psychological specifications, it must be presumed that they were the standards commonly accepted thirty years ago.

Within recent years, major discoveries have been announced in the science of psychology. It may well be timely to consider present curricula for aircraft mechanic training in the light of a few of many currently accepted philosophies applicable to training and learning.

Some people put their faith in an even dozen principles. Enumerated below, they appear particularly pertinent to technical training:

1. Men are not born with skills but can develop the skills they need.

2. Learning results from efforts to satisfy needs.

3. A person learns most easily, quickly and lastingly that which has meaning for him. Both facts and skills are nonsense until the need for them is apparent to the learner.

4. Learning is more efficient and longer lasting when acquired in a realistic situation comparable to real life conditions.

5. A person learns through his own mental and physical activity.

6. Insights are gained during efforts to solve problems which fit facts and skills into meaningful patterns.

7. Piecemeal learning is inefficient and unsatisfying.

8. Facts and skills are learned as parts of a pattern in relation to their use or field of reference.

9. If learners are to gain specific insights, they must know in advance what they are seeking.

10. Students set their own learning goals but they can be influenced to select suitable goals.

11. Realistic practice contributes to learning and serves to fix learning into meaningful patterns.

12. Learning is a process of growth influenced directly by the learner's total surroundings.

Perhaps the preceding philosophies mean the same as the following precepts on technical training which have proved their value through a generation of experience in aviation education:

* Make sure each student knows where he's headed so he'll know what to look for on the way.
* Let each student HEAR IT—SEE IT—DO IT.
* Demand precision performance in every activity.
* For maximum individual skills, set up these elements of a "natural" training situation whenever feasible:
  - Assign each student a realistic training task.
  - Limit each student to a specific work area.
  - Provide each student with necessary tools and instructions.
  - Assist each student to develop his skill through practice.
* Capitalize on each student's success to motivate a desire for still greater skill in job performance.
* Atstrategically located check points, eliminate incapable students on the basis of go no-go performance tests.
* Finalize training on end-item equipment to assure that graduates will be immediately usable.

Few if any of those presently responsible for technical training feel that aviation education is being conducted

for maximum effectiveness. The total task is far too great to be accomplished by technical schools alone. It's far too great a responsibility to be thrust upon any small group of individuals. The outcome is vital to every citizen.

We expect commercial aircraft to fly and carry us to our destination.

We expect a continuous increase in flying schedules with constantly improved service.

We expect to read of improvements in aircraft and related equipment.

We expect advance warning against surprise approach of unfriendly aircraft.

We expect to be protected in event of military attack against our homeland.

We expect civil aviation to expand to a position of proper size in comparison with similar activities of other countries.

Technical training, like an entry for the Kentucky Derby, cannot be produced overnight. Precision workmanship demands a substantial backlog of related knowledge and technical information. Precision skill is an attitude of mind, developed through a process of maturation. Overall, aviation education is everybody's business. Technical training cannot attain maximum effectiveness until it receives additional support from our public schools.

For air-atomic understanding and to assure more adequate numbers of scientists and technicians, there must be a curriculum change in our public schools. Optimum change would not result from mere addition of another course to an already overcrowded curriculum. Indeed, whether the change comes gradually of its own accord or whether we expedite the process, it will amount to another revolution. Its effect will be comparable to the transition which took place in the first half of the twentieth century when we went from horse and buggy days to universal reliance on the automobile for transportation. It will involve bowls full of teachers; the equivalent of a Cotton Bowl full of science teachers, a Rose Bowl full of mathematics teachers, a Sugar Bowl full of English teachers. Every teacher in every school in every state of the Union can advance or retard change. Change is retarded when teachers take no action. This change will be expedited whenever a teacher uses air-atomic age materials as the subject for reading, writing or discussion or as the basis for assignments in science or mathematics. A rapid change to an air-atomic curriculum would provide the optimum contribution of our public schools toward development of an informed citizenry.

It was less than a century ago when Oliver W. Holmes penned: "the wonderful one hoss shay." Writing today he might reminisce on "the wonderful Model T" or the "wonderful DC-3." Will one of our present writers, on becoming accustomed to interplanetary travel, reflect his longing for the good old days of subsonic flight?

Are we agreed that current school curricula are in need of modernization to expedite aviation education? Probably not.

We may not even agree on the definition of "curriculum." Nevertheless, ready or not, change is coming. "There is nothing permanent except change" as observed by the ancient Greek Heraclitus. We do well to exert constructive influence on inevitable change. As educators, our chance for immortality lies in our opportunity to influence our students. History will record the accomplishment of people—some of them the people we are training today.

Education *and the* Air Age

By DR. H. E. MEHRENS
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Dr. Mehrens writes from a rich background of experience in education and aviation. He has been a teacher in elementary and high schools, high school principal, superintendent of schools and college professor, Supervisor of Aviation Ground Schools for the Civil Aeronautics Administration, Region IV, Supervisor in charge of Foreign Nationals Program, CAA and since 1945 Deputy Director of Aviation Education Division and Supervisor of the Educational Program. CAA. In 1952 he was awarded the Brewer Trophy and the Department of Commerce Superior Achievement Award and was a conferee in the Department of Defense Joint Orientation Conference. Dr. Mehrens is the Executive Secretary, National Aviation Education Council and Secretary of the Aviation Education Committee of the American Council on Education and a member of the Advisory Staff to General Lucas V. Beau, Civil Air Patrol. Editor

IN 1903 there occurred two highly significant events. On December 17 of that year, Orville and Wilbur Wright successfully demonstrated the first controlled and sustained flights of an airplane. In 1903 John Dewey published *Studies in Logical Theory*. One event marked the beginning of the age of aviation; the other was basic to an educational system adequate to an air age.

At first thought it may appear that the triumph of the Wright Brothers and the works of John Dewey have not the remotest relationship. Yet, the principles of learning as Dewey observed and defined them were inherent in the procedures employed by the Wrights as they learned to build an airplane that would fly. Interestingly enough, these same principles were employed by Dewey himself as he learned about the nature of learning.

The Wrights were not the first to fly a power driven vehicle. Langley, in 1896, flew a powered model with a thirteen foot wing spread. It did not carry passengers and it was controlled from the ground, but it flew. Previously, passengers had been airborne. In 1783 De Rosier and Laurent made the first balloon ascension, and 100 years later, 1883, John Montgomery flew and successfully controlled a glider in flight.

The Wright Brothers developed a satisfactory propeller; and, with the help of Charles E. Taylor, a machinist in their employ, they built a power plant for their airplane. Contemporaries who heard about the Wright Brothers flights did not believe what they heard. And it is said that among those in Dayton who watched the first powered airplane being built, only the children thought that it would fly. One contemporary said, "The kids hadn't yet learned enough to say it couldn't be done."

There were factors, other than chance, which caused the Wrights to succeed where others had failed—to succeed despite the many ready to say, "It can't be done!" The Wright Brothers were ready and eager to learn from their predecessors, from those who had formulated the first theories of aerodynamics. There was much to learn from such men—if the hypotheses they advanced were not confused with proven fact.

Sir George Cayley, an Englishman, offered the Wrights a mathematical explanation of flight; Lilienthal, a German, supplied them with almost reliable data about the shape of an airplane wing; Pilcher, another Englishman, advanced a principle concerning dihedral —angle of wing with fuselage; Chanute, a Frenchman, had defined for them ten basic principles of flight. We may note that the Wrights did not lack for information about what presumed to be aeronautical principles. It is also of interest that the sources of their information were international in scope.

Yet, fortunately, the Wright Brothers were as ready to question what appeared to be established principle as they were eager to explore all sources of information. They were truly motivated by a dominant interest. They employed the process of experimentation. They refused to be smothered by the weight of tradition. They were deceived neither by the stereotyped thinking of the past nor by that of their contemporaries.

They were among the first to use the wind tunnel. They carefully tested not only the hypotheses and theories advanced by others or conceived by themselves, but also they tested just as carefully what presumed to be established principles of aerodynamics. They succeeded in solving the problem they set for themselves. They learned how to build an airplane that would fly and keep on flying.

The Wright Brothers had their Cayley, Lilienthal, Chanute, Montgomery, and Langley. Dewey had his Pestalozzi, Herbart, Froebel, Spencer and Barnard. The former group began serious research in the field of aeronautics; the latter began a search for truth concerning the nature of learning. As the Wrights had the help of a Charles Taylor, Dewey had access to the scientific studies of contemporary psychologists. In their laboratory, the Wright Brothers proved the truth or falsity of an aerodynamic hypothesis. In his Laboratory School at the University of Chicago, Dewey tested the validity of prevailing psychological and educational theory. He reached conclusions as significant as the advent of powered flight is significant. For basic to current trends in educational practices are Dewey's principles of interaction and continuity.

Kitty Hawk can be regarded as the crisis of the first scene in a fifty year long drama of aviation. Development in the science of aviation has exceeded the most optimistic forecasts. As the Wright Brothers built upon the work of those before them, so those that followed the Wrights, each in turn, has built upon the work of his predecessor. In 1929 Major Carl Spaatz and Captain Ira Eaker kept the "Question Mark" aloft for almost seven days, aviation knew it had a reliable engine. Following this event, aviation records were made only to be broken until in 1951 Major William Bridgman in the rocket-powered "Skyrocket" climbed to an altitude of 79,494 feet and flew at a speed of 1,238 miles per hour.

Meanwhile, the educational scientists continued to build upon Dewey's concepts. Kilpatrick, Harap, Bode, Hopkins, and Alberty each has made notable contributions to educational thinking. Jersild, as well as many others, has undertaken experimental studies in child development and has made available for us carefully prepared interpretations of these studies. Bruner defined six major trends in curriculum development which are providing impetus for the development of aviation education.

It would be impossible to recount all the events of the last 50 years which mark progress in educational thinking. It would be equally impossible in one presentation to review the progress of aviation since the Wright Brothers' flight. Yet, progress in these two area, *in terms of their applications,* have encountered the same phenonemon—a resistance to the changes in thinking each makes imperative. We are reluctant to recognize aviation's impacts and to change courses of action to accomodate them. We have been equally reluctant to bring educational programs into harmony with proven educational theory.

You have been told many times that the impact of aviation has been felt in every area of human activity. Aviation *has* introduced a new era. Aviation *is* the crowning achievement of our technological age.

When I was a boy, my world was very little different from that of my father's childhood or, for that matter, from that of my grandfather's world, when he was a youth. Horsedrawn vehicles provided our chief mode of transportation. Oil lamps were generally employed for illumination. The home was our center of recreation. Our world was a stable world, a safe world, a trusting world.

The world into which my son was born is an entirely different world. And yet, the resistance to change is so great and wishful thinking so predominant that the majority of us still will not believe it. As a boy, I was secure in the knowledge that I lived in the greatest country in the world; one that had never suffered defeat at the hands of an enemy; one favorably located, since to reach its shores, the only potential enemy imaginable would have to cross either the Atlantic or Pacific Ocean or the vast Arctic expanse of ice and snow.

In 1921 Army and Navy aircraft in bombing tests sank three captured German vessels; the Destroyer, *G-102;* the Light Cruiser, *Frankfurt;* and the Battleship, *Ostfriedsland.* The Billy Mitchell story and the reception received by the Lindberg report offers evidence that most of us remained hard to convince; we still refused to believe that we lived in an air age. Pearl Harbor should have convinced us. Eight battleships sunk. By aircraft. A sneak attack? Certainly, undertaken by an enemy who knew we were unprotected and in no position to retaliate. Three days later, aircraft imposed another defeat. The British Battleship, *The Prince of Wales,* and the *Repulse* were sunk by aerial bombs, and the Straits of Singapore for the first time in over a century were opened to an enemy. These events have implication not only for military strategy, but also for diplomatic strategy, national defense, and education. But if I am to believe what I read in the papers, many of us are still unconvinced that we are living in an air age.

It is also interesting that reluctance to accept the educational changes defined by Dewey's principles parallels reluctance to recognize the effects of aviation. There are many self-appointed critics who disparage efforts to help prospective teachers gain instructional skills. They say we should teach teachers what to teach and not how to teach. They tell us that to know a subject is to be able to teach it. Currently, this dispute has reached considerable proportions, with the Ford Foundation supporting a plan which would convert a four-year teacher-college into

a four-year liberal arts college, plus a fifth year of "on the job, pedagogical training" and the American Association of College Teacher Education (AACTE) calling this plan unsound and dangerous.

It is easy to fall into the error of confusing information, the content of a subject matter field, with education, the process of the growth and development of an individual. The Wrights learned to do something man had never done. In the process they used all the relevant information they could gather, but their learning resulted as their experimentation, in terms of their purposes, both tested the validity of existing information and generated new information. Many regarded as educational authorities never succeeded in defining a dynamic educational program. Their heads remained in the sands of tradition. The most advanced of the lot reached the point of talking about integrated subject matter, without realizing apparently that it is within the organic structure of the individual himself that subject matter is integrated, and that such integragation depends upon such an organism interacting with those aspects of his environment that are relevant to his interests and purposes.

For the moment let us leave our consideration of the obstacles that lie in the path of education's progress and consider briefly some impacts of aviation that make necessary great educational concern. Is there any doubt but that this technological age has increased the complexity of society manyfold over that society known a generation ago? Is there any doubt that the advent of the aircraft has been pre-eminent in bringing about these complexities? I have heard remarked by those speaking on the subject of aviation education that the child today does not need to adjust to the air age, that he was born into it; that it is his elder that needs to make the adjustment. My impression is that if the child a generation ago needed adult help so that he became able to meet and solve the problems life held for him, the child today, in view of current situations, needs better and more intelligent guidance.

Currently we appear to be confronted with as bad a case of national jitters as this country has ever experienced. I am convinced that this situation is either directly or indirectly an effect of aviation.

To our apparent surprise, we discover that Russia is about as far along in the development of so-called *nuclear weapons* as we are. To underestimate our enemy has always been our tendency. Chairman Cole of the Joint Congressional Committee on Atomic Energy stated in a recent interview that information recently reaching him concerning Russia's ability to launch a successful air attack against us had changed his whole point of view toward expenditures for defense.

Whether or not we can as a nation work our way out of a dilemma that aviation has helped to bring about appears to depend upon whether or not we can muster national courage and mobilize intelligent leadership. Our position would be greatly improved had our schools during the last fifty years taught pupils and students how to think logically and how to cope with the unique factor in a new situation. Perhaps, before it is too late, there will emerge the genius needed to solve our immediate national problems. I believe there will. Our nation has produced—either in spite of or because of

our educational system—technicians, statesmen, and philosophers who have been among the world's greatest. Let us hope that soon American ingenuity will find a relief for the tensions and the uncertainties characteristic of our air age.

As educators, we have responsibilities toward the solution of the immediate problems these tensions and uncertainties engender. But our chief responsibility is the guidance of the youth that society places in our charge. To dispatch both responsibilities we must be ready to fall into step with our times. I am convinced that in the long run our nation's survival may depend upon our ability to overcome resistance toward change, particularly change in our ways of teaching. We must employ courses of action in education appropriate in an age dominated by aviation—appropriate in an age of 700 mph aircraft and inter-continental airways and all that these imply.

Mankind's survival up to this period of time results because, heretofore, he has been able to adapt himself to his suroundings and to cope with the problems he has encountered. Other creatures over-specialized in one respect or another have become extinct. It has been predicted that man's over-specialized brain will lead to his ultimate extinction. At this point, his intelligence has devised the implements with which this extinction can be accomplished: the aircraft and the nuclear weapons.

What will education do in view of this fact? What will you as an educator do? Will you adopt an educational program that will assure the survival of our way of life? Perhaps the survival of humanity? Can you employ an educational method that will enable the youth in your charge to grow intellectually and adapt themselves emotionally so that they can meet successfully the ever-increasing complexities of our modern age? To do these things you will need to adopt an educational program in which your chief concern is youth activity in terms of *his* interests —one which aims at his growth and development, physical, emotional, intellectual, ethical.

Let us not overlook the fact that such a program is at hand. It mobilizes the energy, the activity, the intelligence of each child. It employs an appropriate educational method. Its subject matter is dictated by *interests* of vital importance and problems of immediate concern to a child, and this subject matter includes all the information from the remote or the immediate past which is relevant to such *interests*. As I have pointed out to you, this program was building concurrently with aviation's development. Is it not time that it was generally adopted?

One thing, as educators, we must remember. We cannot escape our responsibilities. Upon us, our educational viewpoint, and the practice it defines, depends the future of our youth; upon our youth rests the destiny of mankind.

The University Aviation Association Story

By GENE KROPF, *Assistant to the Dean*
Parks College, Saint Louis University

Mr. Kropf has been active in various phases of aviation since 1926 and with formal aviation education since 1939. He is the author of many magazine articles and a textbook titled, AIRLINE TRAFFIC PROCEDURES, published by McGraw-Hill in 1949. He is a member of the Board of Directors of the National Aviation Education Council, board member and past president of the University Aviation Association, member of the Aviation Writers Association, the American College Public Relations Association; board of education, Millstadt, Illinois; the Society of Automotive Engineers and many other technical and civic groups. He is a graduate of Parks College of Aeronautical Technology of Saint Louis University.—Editor

THE UNIVERSITY Aviation Association, (UAA), is the outgrowth of a meeting held at the University of Denver in 1947. Representatives from a score of United States colleges and universities and other organizations were present. They met as a group of administrators of aviation education to talk over mutual problems in the field of aviation. Those present realized that unification of effort was necessary and advisable for the attainment of the aims and objectives of Air Age Education at the university level. This appeared to be particularly desirable since universities were then assuming leadership in this field for the assistance and guidance of public schools through State Departments of Education, School Administrators and Teachers.

Since the Association was formed, it has played an important part in formulating a National Air Policy through the President's Air Policy Commission and the Congressional Air Policy Board.

On November 10, 1949, the UAA became international when the International Air Age Council was organized at the World Conference of The United Nations Education and Cultural Organization, (UNESCO), meeting held in Mexico City.

The Association has assisted industry, government, colleges and universities throughout the world in conducting workshops, institutes, and Air Age Education conferences; it has brought about the exchange of successful Air Age Education programs between member colleges and others; and it has cooperated with the American Association of School Administrators (AASA) in leading Aviation Education sections at its annual meeting. In addition, the Association has worked closely with the United States Air Force, (USAF); the Civil Air Patrol, (CAP); the Air Force Reserve Officers Training Corps, (AFROTC); and has participated actively in the work of the National Aviation Education Council, (NAEC).

UAA Objectives

The University Aviation Association, now in its seventh year, still holds to the aims and objectives outlined at the formation meeting in Denver in 1947. These objectives are as follows:

1. To encourage and assist in the use of aviation information, materials, and subject matter in education.

2. To encourage and assist in the exchange of experience pertinent to Aviation Education and the distribution of useful aviation materials.

3. To encourage and assist in the preparation of useful Aviation Education materials for use in aviation courses and for correlation with existing courses.

4. To encourage and assist in the education of teachers—both for in-service and pre-service training in aviation.

5. To encourage, assist and cooperate with State Departments of Education, the United States Office of Education and the Civil Aeronautics Administration, (CAA), in the formulation and carrying out of state and national programs in Air Age Education.

6. To cooperate with the airlines and other members of the aviation industry, the CAA, National Association of State Aviation Officials, (NASAO), and the USAF in coordinating their efforts with those of the schools in the field of Air Education.

7. To cooperate with similar Air Age Education Associations of other countries by way of exchange of materials, information, and experiences through the channels of UNESCO and the International Association for Air Age Education.

8. To encourage and assist in Air Age workshops, institute and conference activities for teachers, supervisors, and school administrators.

9. To cooperate with educational and aviation associations such as the National Education Association, (NEA), AASA, and the NAEC in the orderly development of Aviation Education.

10. To provide and distribute current bibliographies of available useful materials and sources of materials for the study of Aviation Education.

11. To cooperate with schools in securing programs, direction and guidance, and speakers and instructors for Air Age Education activities.

12. To encourage and assist in teacher-student air travel and exchange.

13. To encourage and assist curriculum development and improvement committees and agencies in utilizing the educational value of aviation in curriculum building.

14. To encourage and assist in providing flight experience for teachers and students.

15. Generally, to assist in bringing to the youth of the country, through education, an understanding and appreciation of the tremendous social, economic, political, scientific, and national defense implications of the airplane and its use.

1954 ACTIVITIES

Program with the Air Training Command

On January 22, the members of the Board of Directors of UAA met with Lt. General Robert W. Harper, USAF, Commander, Air Training Command, and his staff at Scott Air Force Base, Illinois, for an important one-day meeting. The purpose of the session was to discuss the possibility of greater cooperation between civilian educators at the college level and the largest command in the Air Force devoted to education and training. During the pre-conference meeting, definite objectives were set out to include a presentation of problems in the following three areas:

1. Personnel, Recruiting, and Reenlistment.

2. Off-Duty Education.

3. Technical and Flying Training and Training Research and Informational Exchange.

Following general informational talks in the morning, the group broke up into smaller committees to discuss in detail the various problems and possible solutions. When the committee reports were presented to General Harper later in the day, it was agreed by all that the session had been most profitable.

These discussions were continued at another Board Meeting of the Association held in Atlantic City on February 10-11-12, in connection with the annual conference of the NAEC. Definite and permanent committee assignments were made at this time to carry on the work initiated at the Scott Air Force Base meeting. These committees will further define their respective themes so that a complete report may be made to the entire membership of the UAA at the next annual meeting scheduled for early in July of this year.

1954 ACTIVITIES
Program with the Air University

Since many of the member colleges and universities of the UAA also have AFROTC detachments on their campus, it is only natural that the Association should be desirous of working closely with the Air University. It is hoped that in the near future a meeting similar to the one held at Scott Air Force Base may be worked out with General Laurence S. Kuter and his staff. With a number of the Professors of Air Science and Tactics in charge of the AFROTC programs at each campus already enrolled in membership in the UAA, the Association feels that such a meeting would prove mutually beneficial.

1954 ACTIVITIES
Program with Civilian Colleges

Each year the number of aviation workshops and summer conferences sponsored by colleges, the CAP, and others, have been increasing and it is reported that in 1954 this figure will reach an all time high. Here again the UAA will offer assistance to the host schools by supplying speakers and panel leaders for dozens of conferences. The Association has long felt that this service, along with its participation in similar public school programs, is one of the major contributions they have made to Air Age Education.

1954 ACTIVITIES
Program in the Public Schools

Working with and serving as members of the Materials Preparation Committee of the NAEC, the Association has contributed much to the Council's program to provide proper and adequate teaching aids for lower grade levels in the field of Air Age Education. Too, UAA members are frequently called upon to serve as speakers and discussion leaders for teacher training conferences at all grade levels. Outstanding in this area are the UAA members who represent the major airlines of the United States and serve as their education specialists. These men alone will appear at many such programs all over the world during 1954. Other UAA members will serve in the same capacity in schools of our country during the same period.

1954 ACTIVITIES
Annual Meeting

The Association will continue its yearly plan of holding the annual meeting each summer on the campus of one

of the major universities of the country. This follows a procedure set up when the Association was formed so that the annual meeting might serve two purposes. First of all, the members could meet for a series of general business sessions and secondly, they could assist the host college with their summer school program. By selecting a college that offers a well diversified summer program, our members serve as their guest lecturers and members of discussion panels for groups covering all phases of aviation and at all grade levels. In this way the Association feels that they are offering a real service to education by reaching students, teachers, counselors and administrators. The 1954 meeting will be held on the campus of the University of Omaha, Omaha, Nebraska, in connection with that city's celebration of its 100th birthday.

Summary

This has been the story of the University Aviation Association—its aims and objectives—a part of its history—and its plans for the current year. Although a young association in terms of organized activities, its members include many of the real pioneers in the field of Aviation Education. With this background of professional service, the Association is always ready to be of assistance to any group with similar objectives and a real desire to be of service in the field of Aviation Education.

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Nebraska's Air Age Education Program

By CHARLES E. ELMLINGER
Coordinator
Nebraska Air Age Education Division, Univ. of Nebraska

Mr. Charles E. Elmlinger is presently serving as coordinator of the Nebraska Air Age Education Division and as an instructor in Elementary Education, Teachers College, University of Nebraska. Previous to accepting this assignment, he has served as Supervisor of Elementary Instruction, Grand Island Public Schools, Grand Island, Nebraska. Other educational experience has included three years as an Elementary Principal in Charles City, Iowa, and six years of teaching in grade schools in Wisconsin.

He earned his baccalaureate degree at the State College, Eau Claire, Wisconsin. His major was elementary education. Further work at the graduate level at the University of Minnesota led to a Master's degree, with a major in school administration. Since that time he has done additional graduate work in the field of elementary school curriculum.—Editor

AIR AGE Education in Nebraska is a cooperative undertaking of the Department of Aeronautics, the Department of Public Instruction, the State Education Association, the State University, and other educational institutions. The first attempt to jointly sponsor a program began in 1940 when the Department of Aeronautics helped the Department of Public Instruction establish aviation courses by supplying free textbooks to high schools. From this small beginning these agencies continued to promote a defensible program. Today's program utilizes the services of several persons to provide a comprehensive Air Age Education program for Nebraska's schools.

Patterns for Air Age Education

As a result of their efforts to initiate aviation courses in the high schools of the state, the cooperating agencies became aware of these major problems: the lack of suitable learning aids, the need for special teacher education, and the lack of appreciation on the part of parents for the course. These problems provided the challenge that led to the development of a strong program of Air Age Education.

Summer workshops were developed at the state University to give teachers special training. These workshops followed a typical institute program in an effort to reach large numbers of teachers on the campus. Methods classes observed the development of units in Air Age Education in the demonstration school. A series of air tours from Lincoln, Nebraska, to the Omaha Municipal Airport was conducted during the summer sessions. Authorities in Air Age Education appeared for convocation programs. In addition to this general program, a few selected teachers were given an opportunity to develop materials in special courses.

The production of teaching materials required more time than what was available during the summer session. Staff members from the Department of Public Instruction asumed the major burden of producing materials. The following materials indicate the emphasis given to the program:

1. Exploring Aviation, Primary Series, (Six reading units for grades 2-4)
2. Exploring Aviation, (Eighteen reading units for grades 5-8)
3. Air Age Unit Series, (Suitable for use in grades 10-12)
   a. Vocations in Aviation
   b. The Family Takes to the Air
   c. Great Thinkers in Aviation
   d. The Literature of Flight
   e. Man in His Air Environment
4. Elements of Pre-Flight Aeronautics, (Science textbook for grades 11-12)
5. Aviation Education Plans and Materials, (Manual for teachers)

Within a few years a program of Air Age Education had affected every school in the state. Credit for developing the program must be given to many individuals. However, a program must continue to grow. The remainder of this article will indicate a program that reflects a continuing concern for providing ideas and materials for Nebraska's schools.

Further Attempts to Strengthen the Problem

In the spring of 1951 the Department of Aeronautics created the Nebraska Advisory Committee on Air Age Education. Members on the committee represented school superintendents, the State Department of Public Instruction, the State Education Association, Teachers College, University of Nebraska, Municipal University of Omaha, and other state colleges. This committee was asked to evaluate Nebraska's Air Age Education program and to make recommendations to further improve the program.

The recommendations of the Advisory Committee on Air Age Education follow:

1. The development of an Air Education Center. This center, to be associated with the teachers college at the University of Nebraska, would be responsible for such activities as the following:
   a. The collection and evaluation of available Air Education materials.
   b. Facilitating the preparation of needed additional Air Education materials.
   c. Dissemination of information concerning the materials and the distribution of them.
   d. Providing a materials laboratory for use of teachers and administrators.
2. The development of Air Education Regional Clinics. These clinics, planned by the Air Education Center and associated with colleges and public schools, would have the following purposes:
   a. To give teachers and prospective teachers an opportunity to become acquainted with Air Education needs, materials, and methods.
   b. To provide an opportunity for educators to have an orientation experience in the use of the airplane as a teaching device.
3. The development of Air Education summer session programs of teacher education. Plans for such programs which are expected to *emanate* from the Air Education Center would include the following:
   a. The preparation of needed Air Education materials and teaching guides in workshops.
   b. The enrichment of existing teacher education courses in the elementary and secondary

areas by the introduction of Air Age materials and techniques.

c. The use of the airplane as a flying laboratory to demonstrate the need for Air Education.

4. The development of new plans for the use of Air Education facilities and resources at the community level. In implementing this responsiblity such activities as the following would be undertaken:

a. Assisting local schools in developing plans for utilizing available local and state air facilities and resource people.

b. Assisting state agencies in the establishment of appropriate training experiences and requirements for certification of facilities and personnel.

5. The development of new plans for the use of air education facilities and resources at the State and National levels. Achievement of this goal envisions the following:

a. Attendance at State, Regional, and National meetings where Air Age topics are under consideration.

b. Cooperation with civilian and military defense agencies.

The Nebraska Air Age Education Division

The Department of Aeronautics accepted the recommendations of the Advisory Committee. With the cooperation of the State University and the Department of Public Instruction, arrangements were made to begin the new program as of September 1, 1951. This led to the establishment of the Nebraska Air Age Education Division. The Department of Educational Services, Teachers College, University of Nebraska, agreed to supervise the activities of the division.

The Nebraska Air Age Education Division is supported financially by the Department of Aeronautics. The budget provides for the employment of a full-time coordinator, secretarial services, local clinics, development of teaching materials and maintenance of the Air Center.

Link Aviation, Inc., Binghampton, New York, has made additional grants to the Nebraska Air Age Education Division. These grants were used to help disseminate and produce materials for schools in other states and to furnish scholarships for out-of-state teachers to attend summer workshops at the University of Nebraska. This procedure has allowed the Nebraska Air Age Education Division to reach schools throughout the country.

The present Air Age Education program in Nebraska is the major responsibility of the Nebraska Air Age Education Division. The Advisory Committee meets annually to review the program and make suggestions for new activities. Presently, the division is responsible for a summer workshop program, the development and dissemenation of materials, regional and local clinics, the maintenance of an Air Center, and cooperation with agencies promoting Air Age Education programs at the national level. Changes in the program will be made as the Advisory Committee directs.

The Summer Workshop Program

Each summer selected teachers at the graduate level participate in an eight weeks curriculum workshop. Four hour daily sessions provide time to carry on a comprehensive program.

During the session students examine current curriculum materials, discuss curriculum trends with visiting resource personnel, become acquainted with local community resources, and witness the development of a project in the demonstration school by daily observation.

Each participant is expected to develop curricular material to use in his teaching position. A variety of materials emerge from each workshop. Some projects undertake to revise and bring up-to-date existing courses of study. Other projects include special units for experimental use, annotated lists of teaching materials, and stories written to provide additional reading materials for school children.

The participants for the workshops are selected carefully to obtain competent students. It is hoped that each student will make a valuable contribution to the Air Age Education program. They can assist the program by acting as the resource leader in their school system when they return to their job. Several participants have arranged local clinics in their schools. One participant helped to organize an inservice training program that devoted several meetings to Air Age Education. Other participants have experimented with materials to determine what ideas should be included in new materials. The workshop is just the beginning of a cycle in promoting Air Age Education.

Teaching Materials

One of the important functions of the Nebraska Air Age Education Division is the development and dissemenation of materials for teachers. Many of these materials are developed from ideas contributed by workshop participants. And suggestions come from teachers and administrators in Nebraska schools.

The following materials have been developed for teachers:

1. *Air Age Teaching Aids.* This brochure contains an up-to-date list of free and low cost materials that are available from many sources.

2. *An Airport Laboratory Experience.* This brochure contains information for teachers planning a visit to a large airport and a small airport. Specific suggestions are made for the teacher.

3. *Enriching the Curriculum With Air Age Ideas and Materials.* This bulletin contains a series of resource units for elementary and junior high school teachers. Suggestions for integrating Air Age ideas are stressed.

4. *Aviation and Mr. World* and *Ring Around the World* are filmstrips that illustrate how elementary teachers may use Air Age ideas.

Other materials are prepared and distributed to fulfill specific needs. A unit to help teachers observe the Fiftieth Anniversary of Powered Flight was prepared in mimeograph form. Many aids are prepared in this manner.

In addition to developing materials, the center assists other agencies in distributing teaching materials. Materials are collected and examined continuously. When a particular item appears to be especially useful, the center circulates sample copies of it to Nebraska schools.

Regional and Local Clinics

To assist a school system or a number of neighboring schools in incorporating Air Age Education in their programs, the Nebraska Air Age Education Division sponsors local institutes or local teacher workshops. The division and the local school cooperatively make arrangements for resource personnel, teaching materials, and an airport laboratory experience. Local clinics vary

in length from one day up to one week. During the clinic resource personnel help teachers understand the problems of Air Age Education, investigate ways to enrich their curriculums with Air Age ideas and materials, and become acquainted with the uses for special teaching materials. The airport laboratory is planned to acquaint teachers with a vital community resource. Finally, an air tour offers teachers a chance to experience a richer meaning of the Air Age. Surveys indicate that less than fifty per cent of the teachers have flown in an airplane. Therefore, the air tour is vital to the Clinic.

The local clinic does not end with the day's program. Follow-up contacts are made from time to time. These include supervisory help for teachers working on curriculum projects, securing requested teaching materials, and obtaining the services of additional resource personnel.

The Air Center

The Air Center is located at the University of Nebraska. It serves as a laboratory for teachers and students preparing to teach. The Center provides an intensive collection of charts, maps, pictures, magazines, and other audio-visual aids for research work. A School Link Trainer and a Cloud Display are examples of other aids that are available.

The Air Center serves as the core of the entire program. Requests for materials and services are directed to it. Teachers and other interested persons use the facilities of the Center daily.

Annual Air Age Clinic

Each year the division sponsors a one-day Clinic for members of the Advisory Committee and other invited persons. It offers an opportunity to share new ideas in training youth for the Air Age, to review new materials collected from many sources, and to present problems that affect civil and military aviation.

Previous programs have emphasized the scope of Air Age Education. The 1954 Clinic will attempt to show how Air Age Education becomes an integral part of the present school curriculum. Four demonstrations—*Neighborhood Helpers at the Airport, Why We Can Fly, Saving Our Soil From the Air,* and *This is the Way We Learn About Aviation*—presented by teachers from Beatrice, Grand Island, Lincoln, and Westside Community Schools will illustrate how representative Nebraska schools are teaching Air Age Education.

Cooperation With National Programs

The Nebraska Air Age Education Division maintains contact with other groups working in this area. Representatives attend national meetings to acquire new ideas and share ideas developed in Nebraska. Further, as materials are produced, they are sent to interested persons throughout the country.

Summary

The development of an Air Age Education program in Nebraska has several interesting features. First, the program has always been a cooperative venture by all interested agencies. Next, careful planning has marked each new venture. And, the program has attempted to provide adequate teacher training, to develop worthwhile teaching materials, and to provide personal help for schools. With this background the program has every promise of continuing to serve the teachers of Nebraska.

A School System Co-operates *with an* Air Force Base

By HAL O. HALL
Superintendent, Belleville Township High School & Junior College
Belleville, Illinois

Doctor Hall was for nine years a member of the staff of Southern Illinois University in charge of the campus laboratory schools and responsible for developing a good high school program there. Since 1945 he has been superintendent of the high school and junior college in Belleville and active in the further development and refinement of the high school curriculum and the organization of the junior college. He has been a contributor to professional periodicals in the area of secondary school curriculum and teacher education. He has also been active in the educational legislative program in Illinois and is a past president of the Illinois Association of School Administrators and the Illinois Association of Junior Colleges.—Editor

THE PUBLIC schools of Belleville have cooperated with the Scott Air Force Base since its establishment in the early 1920's by educating the children of the Air Base personnel in the elementary schools and the high school. In recent years, both the youths and adults of the Air Force Base have availed themselves in increasing numbers of the educational offerings provided by the day and evening divisions of the Belleville Township Junior College.

Adjustment Service

One of the problems, of course, in absorbing youngsters from all over the nation who come to the public schools in Belleville as their parents are assigned to Scott Air Force Base, is that of providing for a rapid adjustment to a new school system. This is accomplished in the elementary school through letters to parents explaining the program of the schools, by parent-teacher conferences and by a sensitiveness on the part of the elementary school faculty to the adjustment needs of these youngsters. An able school nurse and special educational services in the area of speech correction round out the adjustment service of the elementary school.

In the High School and Junior College, incoming students are counselled by student personnel workers who are professionally prepared by experience and education for counselling service. These men study the background of courses, activities, work experience, educational and vocational goals, the health record of incoming students and after conferring with the student (and if possible with the parent as well) will guide the student in his choice of subjects and activities. The High School and Junior College offers a rich curriculum of courses and activities which enable the counsellor to fit the newcomers into the program of the school in such a way as to expedite the realization of educational goals. A high school handbook and a college catalog are helpful publications in the rapid adjustment of newcomers to the Belleville educational and social milieu.

The student council stands ready with a guide service to escort the novitiate around the campus and to familiarize him with the location of classrooms, bookstore, cafeteria, auditorium, gymnasia, administrative offices, etc.

A nurse and school physician are available for consulation and provide a physical examination service. A reading clinic offers to increase the reading rate and comprehension of those who need and request the service.

A friendly student body and a faculty sensitive to the needs of students are valuable assets in the adjustment program of the school.

Evening School

In the evening school, educational counselling is one of the main responsibilities of the director of evening school although student personnel workers are on call for some assistance to evening school students. The evening school faculty provide educational guidance at registration time and informally during the evening school semesters.

From 150 to 200 Air Force personnel regularly attend the evening school each semester. Courses that are most popular with them are mathematics, psychology, and business education. The Air Base encourages the personnel to attend by paying one-half to three-fourths of their evening school tuition and by encouraging their Education and Information Office to cooperate with the school in publicizing the courses to be offered and by offering office space for the registration of Air Base personnel at the Base, and by carrying news releases about evening school in the Base newspaper.

The College makes a real effort to tell the evening school story by frequent news releases to newspapers and radio stations in the service area of the Junior College, by the purchase of display ads and radio plugs, by the use of movie trailers in the movie theatres and drive-ins in the county prior to registration. Air Force personnel are influenced to some extent by this publicity barrage.

As is the case all over the country, enrollment in the evening school is constantly increasing. In the last two years, approximately 800 students have enrolled each semester in the evening school. A careful count revealed that slightly over 1200 different individuals were served by the evening school classes in the last year and that approximately 200 of these individuals were Air Force personnel.

Advantages to the Public Schools

In the evening school, some of our most valued teachers have been unusually well-prepared people who came to us to teach their specialties. Some of our best teachers in the day school are Air Base wives who substitute for us in the elementary schools and high schools or who do part-time teaching for us. Several men have come to us as permanent members of our staff after leaving the instructional service at Scott Air Force Base. Some of our most valued leaders and participants in our Great Books Discussion Group have been from the military or civilian personnel at the Air Base.

Not infrequently have members of our Staff been invited to educational conferences at the Air Base where we have profited by the experiences and the research of the Air Training Command in the area of methodology, the speeded reading program and in guidance and counselling. The Commander of the Air Force Base made it possible two falls ago for the principal and assistant principal of the High School and Junior College to visit Lackland Air Force Base, San Antonio, Texas and Sheppard Air Force Base, Wichita

Falls, Texas, to study the counselling and instructional programs, respectively.

Results of the Program

As indicated above, the program of cooperation with the Air Base has been mutually beneficial. Over the years, hundreds of elementary and high school students have been educated for varying lengths of time in the local public schools. This year, there are 72 students in the high school and approximately 300 in the elementary school who are children of Scott Air Force Base personnel. This semester, there are 133 who are attending evening school who are employed at the Air Base.

In the local schools, we have the satisfaction of knowing that we have provided many of these young people with good educational advantages—have provided them a "school home away from home". In the day and evening school branches of the Junior College, we have the satisfaction of knowing that we have provided hundreds of individuals with the educational foundation needed for advancement within the service and for the realization of vocational and cultural goals in civilian life later on.

We have directly benefited in a professional way too by our association with Base educational specialists and by the fine personnel whom we have attracted to our school system. Finally, it is gratifying to realize that in a significant way our cooperation with the Base has contributed to the nation's defense effort.

BOOK REVIEWS

Dynamic and Abnormal Psychology. By W. S. Taylor. N.Y. American Book Company. 1954. $5.50.

Dynamic and Abnormal Psychology is a new text for courses in abnormal psychology and an excellent supplementary reference for workers in the areas of personality, educational psychology, social psychology, and related fields. It brings together many of the most important contributions to dynamic and abnormal psychology and organizes them within a framework of concepts of basic general psychology. The volume is especially well organized and the materials are presented in a manner that will appeal to students. There are some nineteen chapters and a helpful glossary of terms used in the field. The material is divided into three major categories: everyday mental abnormalities; minor mental disorder (the psychoneuroses); and major mental disorders (the psychoses).—WILLIAM P. SEARS.

Our Secret Allies: The Peoples of Russia. By Eugene Lyons. Boston. Little Brown and Company in association with Duell, Sloan and Pearce. 1953. $4.50.

Eugene Lyons, in this informative and challenging volume, seeks to demolish the myth of unity between the Kremlin and its subjects. He traces the rise of the Kremlin since 1917 and the unceasing tensions which have developed between it and the peoples of Russia since that time. Optimistically, Mr. Lyons sees a hope of eventual alliance between the Russian peoples and the Western World. How much of all this is wishful thinking, it is difficult to say. However, a reading of Mr. Lyon's book will provide teachers with an excellent picture of the Russian people by a journalist who has for long years made a study of Soviet affairs.—WILLIAM P. SEARS.

The Institute *of* Aviation *of the* University *of* Illinois

By LESLIE A. BRYAN, *Director*

Dr. Leslie A. Bryan is Director of the Institute of Aviation and Professor of Management at the University of Illinois. He is a past president of the University Aviation Association and the National Aviation Education Council and is currently a vice-president of the National Aeronautic Association and the American Association of Airport Executives.

He was also formerly Director of Aeronautics for the State of New York. He is still an active pilot with single and multi-engine land, sea, and helicopter ratings, and is a Colonel in the Air Force Reserve. He is a graduate of the College of Business and of the College of Law of Syracuse University and was formerly Franklin Professor of Transportation at Syracuse University.

Dr. Bryan is the author of numerous articles and books on transportation and related subjects. His first book, Aerial Transportation, *was published in 1925 and his latest,* Traffic Management in Industry, *was published last year.*

Currently he is serving as a member of the Board of Aeronautical Advisors for the State of Illinois and as an editorial consultant for the New Standard Encyclopedia *and the* World Book Encyclopedia.. *He is also educational advisor to the National Headquarters of the Civil Air Patrol.—Editor*

UNIVERSITIES in the United States are becoming more and more convinced that they have clear-cut responsibilities in four broad fields of aviation education: general education, professional education, vocational education, and research. What one university is doing to meet these responsibilities and their inherent challenge is the story of the Institute of Aviation at the University of Illinois.

The institute of Aviation was established in 1945. Behind its formation was the fundamental concept that aviation touches, or has an influence upon, all branches of educational activity, and that aviation education should be a university-wide responsiblity. Accordingly, the Institute was set up as a horizontal integrating agency. The departments, colleges and schools are regarded as the main vertical shafts of the educational mine and the Institute as a horizontal channel connecting them.

The conviction of the Institute is that the whole field of aeronautics offers a phase of education that has most urgent implications for the future. The Institute believes that the university should meet its responsiblities in the field of general education through the enrichment of liberal arts courses, a widened scope for guidance procedures, and the development of a general course on the broad social effects of aviation. It believes also that the university has an increasing responsibility in the field of professional education, particularly in the areas of business administration, engineering, and the training of teachers.

Vocational Training

In the fields of basic vocational education, the Institute has accepted the challenge of aviation by setting up flight training and aircraft maintenance courses. It has accepted also the responsibility for fostering educational and research activities related to aviation in all parts of the University. As presently operated, the Institute of Aviation combines the functions of aca-

demic instruction, flight training, aeronautical research, and management of the University of Illinois Airport.

The Insitute, in keeping with its educational philosphy, offers instruction only in those courses which are not being given by other departments of the University. Hence, instruction in the main is limited to the pre-flight and flight training courses, the aircraft maintenance courses, and one other course, "Aviation in the Modern World." The latter is a general course which introduces some of the broad social, economic and political aspects of aviation, as well as some scientific aeronautical information.

These courses are open to students in all departments of the University and conducted in a manner similar to other courses. The direct instructional cost is borne by the University, but the cost incidental to the running of aircraft in the flight training courses is borne by the student. This charge corresponds to a laboratory fee in other University classes.

Flight Training Courses

Each of the following flight training courses gives three hours of credit acceptable toward a University degree: (1) Private Pilot, (2) Secondary, (3) Intermediate, (4) Advanced or Commercial, (5) Flight Instructor, and (6) Instrument Flight. Other ratings can be secured in accordance with the students' needs. Examples of such ratings are those involving multi-engine aircraft and sea-plane flying.

These flight courses were inaugurated in May, 1946. Since then, there have been over twenty-four hundred students enrolled, and about 97% of them have completed their courses successfully and have received certificates or rating from the Civil Aeronautics Administration. It is noteworthy that in eight years of flight training, only one accident resulting in minor injuries to a student has occurred.

Co-ordinated with the flight program is the pre-flight instruction. The ground school subjects are Aerial Navigation, Navigational Aids—Instruments, Radio, E-6B Computer, and others; Instrument Flight Procedures; Aircraft, General Service of Aircraft, Theory of Flight; Aircraft Engines; Civil Air Regulations; Meteorology; and Techniques of Flight Instruction.

The aircraft maintenance curriculum is another main instruction responsibility. This two-year training program on the college level includes both technical and liberal courses designed not only to prepare the student for the Civil Aeronautics Administration mechanic rating and for the private pilot rating, but also to meet a need in the aviation industry for men trained on a sub-professional basis.

Upon graduation from the course, the student is qualified to perform or supervise the maintenance and repair of any aircraft or aircraft engine and all of its related parts, and to flight-test repaired aircraft. Also, he has an excellent background for sales, service, operations, flight engineering, and management in the aviation industries.

University Co-operation

The Institute also asumes some co-operative responsibility for several courses offered by many colleges, and schools of the University. For instance, there is the Professional Pilot Course in the Aeronautics Section of the Division of General Studies; the

Aeronautical Engineering courses and the Airport Construction Course in the College of Engineering; the Management courses in the College of Commerce and Business Administration; and the Regional and Urban Planning Course in the College of Fine and Applied Arts.

The aeronautical research activties of the Institute, since it is a horizontal organization, are channelled as far as possible into those departments of the University which have the staff and the facilities to handle research problems. Thus it is possible to secure the cooperation of highly specialized personnel which would not otherwise be available. This policy also brings to the attention of the various departments certain research activties with aviation implications which might not be brought home to them as vividly if one of their own members were not doing the research.

Among the colleges and departments currently co-operating with the Institute in research fields is the Physical Enviroment Unit of the College of Medicine which is conducting aviation medical work in its laboratories. Typical of these co-operative research studies is the instrument panel project on which the Institute of Aviation, the Department of Psychology, and the United States Navy worked out together. The idea for this project was conceived by engineers at the Naval Research Special Devices Center at Port Washington, Long Island. The Office of Naval Research, provided the funds and did the engineering.

The Navy placed the psychological phase of the project first and assigned it under contract to the University of Illinois where it was carried on by Professor A. C. Williams, Jr., formerly wartime lieutenant-commander in the Naval Air Forces and now research associate professor in psychology.

Occasionally, the Institute carries out research projects independently. One recent project of this sort is an experiment in training non-instrument trained pilots to fly under instrument conditions sufficiently well enough to fly out of such conditions.

Research Publications

The Institute itself, in connection with its research function, issues two types of publication—first a group of reports on research results, and second, a series of bulletins on aviation subjects of an extension service nature issued to the citizens of the State.

The operation and management of the University of Illinois Airport is another main function of the Insitute of Aviation. The airport is a Class IV (Trunk) field with an area of 770 acres. There are three concrete runways, each 5,300 feet long and 150 feet wide, and one turfed runway 4,000 feet long and 150 feet wide. The total length of the taxiways, which are 50 feet wide and paved with concret, is 12,000 feet.

A huge hanger, 100 feet by 360 feet together with appurtenance buildings and control tower, provide facilities for making the airport operative for both educational and commercial purposes. In addition, there are seven research buildings, a physical plant building, and twenty-five T-hangers for housing privately-owned aircraft.

Airport Management

The Director of the Institute of Aviation acts as manager of the airport with the chief flight instructor and aircraft maintenance engineer doubling as

assistant airport managers. The heads of the Department of Aircraft Maintenance, Field Maintenance, and Flight, and their staffs conduct the day-by-day operations of the airport.

The aircraft maintenance engineer supervises the aircraft maintenance and repair shop which is responsible for the mechanical upkeep of the University flight equipment and for emergency repairs on transient and field-based aircraft. The shop serves also as a laboratory for the instruction of the students enrolled in the aircraft maintenance curriculum. It is approved in all categories by the Civil Aeronautics Administration and is equipped to handle large or small repair jobs. An approved parachute loft for the repair and packing of parachutes is an adjunct to the maintenance and repair shop.

Currently, the majority of the University's fleet of 37 aircraft is being used in student flight training. Certain of these aircraft are available also for rent to approved members of the University staff who hold pilot licenses when the aircraft are not needed in the instruction program. Most of the aircraft are two-place Aeronca Champion trainers and similar aircraft. Included in the fleet are 4 Beechcraft Bonanzas, 2 Boeing trainers, 1 five-place twin engine Cessna, 1 AT6 trainer, and 1 Seabee amphibian.

The physical upkeep and maintenance of the airport is the responsiblity of the Field Maintenance Department.

Flight Department

The Flight Department is responsible for the flight instruction, the university charter service, and the co-operative research projects involving flight. Flight training is under the supervision of the chief flight instructor, who is a CAA designated private and commercial pilot examiner.

The university charter service is available to University executives, faculty members, and staff who desire to be transported by air either when travelling on University business or in cases of emergency. It functions in the manner similar to the car pool. About one-half million passenger miles are flown each year in this service.

The Flight Department is often called upon to fly aircraft for research or allied purposes. Typical of this are the flights in connection with experiments in artificial rain making and survey flights for the Natural History and Geological Surveys. Photographic flight missions of various sorts are frequently flown.

One of the interesting features of the work of the Flight Department is the teaching methodology for the beginning flight student. Experiments developed the fact that many things formally taught in the air could be taught better and quicker in a ground trainer, a specially built school Link, under the so-called Illinois plan.

The course consists of about eleven hours of fundamentals on the ground in the School Link, ten hours of concentrated flight training in conventional air work in Aeroncas 7-AC, and fifteen hours of cross-country and night flying, radio work, actual flight plan filing, and the use of airways and aids to navigation. Also one trip under the hood is included just to prove to students that new pilots cannot fly by instruments alone.

Many universities note the fact that technology brings social change, accept the thesis that inventions make certain changes in customs and social institutions, and then, for some reason, do

relatively little about it. The University of Illinois, however, is not in this category. The University has recognized the fact that aviation touches all branches of educational activity and that aviation education is a university-wide responsiblity. The Insitute of Aviation is therefore the University's attempt to organize its facilities so as to do the best job possible in meeting its responsibilities in aviation education.

As an aid to the universities of America, the Institute of Aviation is presently compiling a handbook of procedures which can be recommended to colleges and universities who wish to engage in aviation activities. This project is being financed by a grant from The Link Foundation. It is hoped to have the handbook available for distri-'bution in the fall.

BOOK REVIEWS

Making and Using Classroom Science Materials in the Elementary School. By Glenn O. Blough and Marjorie E. Campbell. Illustrated by John J. O'Rourke. N.Y. The Dryden Press. 1954. $2.75.

This book, addressed to prospective teachers and to in-service teachers of science in the elementary schools, is going to prove worth its weight in gold. It is the answer to the long heard cry of the thousands of teachers who say "I've had no experience in making science equipment and I don't know where or how to begin." In the opening chapter on "The Science Room and the Science Teacher" many of the activities that usually are a part of the elementary science program are considered in detail and in relationship to the objectives of teaching science in the elementary school. Each of the subsequent chapters opens with a brief statement of the reasons for teaching the subject matter content of elementary science. Then, through discussions, drawings, and photographs, appropriate activities are described that envolve the construction of equipment, apparatus, and devices used to demonstrate basic science principles. The constructions are all simple enough to be carried out by elementary school children and the materials are those usually available and costing little or nothing. Although the book is designed to stand alone, it follows the general plan of *Elementary-School Science and How to Teach It and Activities in Elementary-School Science* by Blough and Huggett.—PAUL ZANKOWICH.

The Teacher and His Work. By George Gould and Gerald Alan Yoakam. N.Y. The Ronald Press. 1954. $4.50.

This is the second edition of a text that met with favorable comment when it first appeared in 1947. It is an excellent approach to the purposes and nature of education and, as a basic text for a first course in education, should assist the student in developing a perspective of the whole field of public education in the United States.—WILLIAM P. SEARS.

School *and* College Service *of* United Air Lines

By RAY O. MERTES
Director, School & College Service
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IN FEBRUARY of 1954, School & College Service of United Air Lines, the pioneer airline aviation education service, started its fourteenth year of serving the schools of our nation as well as the schools of other nations of the world with instructional aids in the broad field of aviation. In 1940 the basic philosophy upon which the department was founded was stated: (1) to constantly survey the changing needs of educators and students in relation to aviation, and (2) to serve them as fully and as widely as possible with materials of instruction which would meet these changing needs and correlate with school curricula on all levels. This philosophy has continued to inspire the service over the past thirteen years.

It is believed that people of our nation generally are air-minded—but that they are not totally air-conscious. There still is much to be done in teaching our young people and adults some of the mechanical aspects of the airplane, but one of the greatest needs is that of interpreting how the airplane is affecting the people of the world—economically, socially and politically.

In interpreting social and economic phases, we must recognize that because of the airplane the world has grown a great deal smaller in time and space relationships—but as the world grows smaller, problems of interpretation increase—"as the world grows smaller, the community expands". Today we have what might be called a 35-hour world since at commercial speeds of about 350 mph, no two places are more than approximately 35 hours apart—if the flight could be made non-stop. When commercial planes reach speeds of 1,000 mph, the world will shrink to what might be called a 12-hour world. Evidences in the increase of the speed of planes are many—Major Yeager's 1,650 mph actually means about 27 miles per minute.

Because of the nearness of peoples due to the airplane's ability to bring them together in terms of minutes, we have new challenges in languages and international understandings. There is a new challenge in teaching all people more about the likenesses of people rather than the differences. Geography takes on new impacts—people must become more conscious of north and south geography rather than just an east and west interpretation. The globe becomes a "must" as a teaching tool in every classroom of America. And, in addition to the standard three R's, we must add three more—the teaching of Rights, Relationships and Responsibilities.

The 1954 program of School & College Service includes a wide variety of materials and services. From the standpoint of materials of instruction,

the items run all the way from third grade stories such as "Mike and Nancy at the Airport" and "Mike and Nancy Take a Flight" through the various intermediate, junior high school and senior high school levels of booklets and picture sets up to and including a suggested course of study on the college level as well as a suggested course in adult education on "How to Travel". One major promotion centers about this course of study on "How to Travel" since it is believed that something should be done to make Americans good travellers—to teach Americans the likenessess rather than the differences of people and to emphasize that no one need be a "foreigner" when travelling in foreign countries. Under United Air Lines' broad philosophy, this suggested course of study also includes railroads, steamship lines, bus lines and travel agencies.

The present program features four slidefilms, each with accompanying fully illustrated story handbooks on various aspects of aviation. Also, six motion pictures are available to the schools—including the company's latest film "The World in a Week—California", and "United 6534"—the latter dramatically portrays in full color the story behind the servicing of an airplane and the flight of that airplane from coast to coast, using all modern navigational aids such as ILS, omni-range, pressure pattern flying, etc.

Other major services provided the schools include speakers, the conduct of airport tours, teacher institute programs and curricular assistance to local, state and national educational groups.

In its long period of pionering services to education through aviation educational materials, the staff of School & College Service has had the pleasure of working closely with all other agencies interested in aviation education. Included have been the Civil Air Patrol of the U. S. Air Force, the National Council for Educational Travel, the Aviation Education and Development Division of the Civil Aeronautics Administration, the National Aviation Education Council, the University Aviation Association, two other airlines having educational services—Trans World Airlines and Pan American World Airways—and state departments of aeronautics and others. Through such unity of effort, it has been found possible to best meet the needs of schools in relation to one of the greatest motivating forces that has challenged education—namely, aviation.

During World War II, aviation advanced approximately twenty years in its development, and the younger generation was found to know a great deal more about aviation than did the educators. It was thought that there were a million two-dimensional earthbound teachers trying to teach thirty million three-dimensional airborne youth. Some of the aviation teaching during this period was done through the "unit plan"—others were integrating, fusing, and correlating aviation into the everyday studies. In many schools specific emphasis was directed towards courses in the science of pre-flight aeronautics on the high school level.

United's school materials were adapted to meet the changing needs of the war period and were more or less technical during this time. Now they are less technical, with emphasis on and approach to the relationship of aviation to living as a whole—to living not only in an Air Age, but in an "Age of Great Scientific Change". Today we find a two-fold emphasis—(1) the integra-

tion of aviation instruction into its proper place in all grade levels and (2) a concerted effort towards a separate elective course of study on the high school level such as developed by the Civil Air Patrol of the U. S. Air Force. And, much has been accomplished by educators in these respects.

The history of United's service to the schools is an interesting one. In its beginning it featured teaching kits on three grade levels which were merchandised to the schools. In 1942 a scholarship program for teachers was experimented with at the University of Nebraska. This ultimately grew to a full scholarship program carried on in the summer sessions of 1943-1946 at fifty universities and colleges. In this program more than 700 teachers participated. The scholarships were set up for two purposes: (1) to help grade and high school teachers to prepare aviation instruction materials for teachers and pupils, and to develop improved teaching techniques; and (2) to assist teachers and college professors to do research work in line with aviation education.

In 1943 United started its full-scale slidefilm program with the release of "Behind the Scenes of a Coast to Coast Flight". This slidefilm was given outright to thousands of schools and was followed later with such subjects as "Meteorology and Navigation", "Research Engineering", "Global Concepts in the Age of Flight", and "Seeing the Airport". The "give-away" aspect of this program was changed in 1947 and the slidefilm subjects were put on a free loan basis.

When teacher kits were discontinued in 1946, the whole materials of instruction program went on a free or free loan basis. It was felt that materials could be better "tailored" to meet the needs of teachers and students if they were presented in story leaflet, booklet and picture set form. This policy continued over the years.

United's School & College Service has received requests for materials from practically all nations and has become recognized as one of the outstanding services for education. It is the only service among the airlines which features a full-time field staff and materials of instruction kept up to date, with new items being added annually to meet curricular changes. A new order form is released to the schools in October of the school year. Most of the material is distributed through requests received at the headquarters office and the five field offices located at Chicago, Los Angeles, San Francisco, Seattle and New York. Today there is an ever-increasing need for more materials of instruction in aviation education, especially on the primary grade levels and the adult levels.

Ultimately through such aviation education services, it is to be hoped that the United States not only will have "air-conditioned teachers" but a public which understands aviation in all its aspects, and how it is affecting the world as a whole. There is the final hope that people will understand the airplane and use it as one of the greatest instruments for peace ever developed by man.

Michigan's Contribution *to* Air Age Education

By MARY R. MARTIN
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MICHIGAN schools as well as all schools throughout the United States have for many years been interested in Air Age education. It was, however, not until plans for the Commemoration of the 50th Anniversary of the Powered Flight were being made that educators of both the elementary and secondary schools began to evaluate their present curriculums. As a result of this evaluation, the educators realized the many opportunities afforded by Air Age education which could, and should be, incorporated in our present-day functional curriculum.

State and National Agencies Give Their Assistance

As Michigan educators began to work with their supervisory personnel and teachers, they not only received encouragement but a great deal of help from the Michigan Historical Society, Michigan School Activities Committee, Michigan Department of Public Instruction, Michigan Department of Aeronautics, and the National Aviation Education Council. These agencies provided the schools with excellent bibliographies, factual information, pictures, film strips and movies. They also made available materials and units on aviation which they themselves had developed, or which were developed in other cities or states.

Airplane manufacturers and airline companies made the same type of materials available as the State and National agencies. All air-port managers and personnel encouraged and assisted teachers and pupils in their visits to the air-port.

Librarians Promote Air Age Education

City school and county librarians, city librarians, the state librarian, and the University of Michigan elementary school librarian all made their resources available to children, teachers and parents.

Rural Section of the Michigan Education Association Concentrates on Air Age Education

The rural section of District Three of the Michigan Education Association, comprising rural teachers and supervisory personnel from three counties, under the chairmanship of Mr. Howard C. Thayer, Deputy Superintendent of Washtenaw County Schools, met at Willow Run Airport, Willow Run, Michigan for an entire day to tour the airport and to pre-plan for a unit of work, which they in turn would plan with their pupils.

In-Service Program of the Michigan State Normal College

In two directed teaching courses

which were given in Lapeer and Washtenaw counties, and in consultative service provided for teachers in Jackson and Macomb counties, the Unit Approach to teaching was required at all grade levels. Air Age education was to be used in all units. The unit approach not only provided opportunities for teaching skills, and using skills already taught, or reteaching skills when necessary, but it provided opportunities for many other functional and creative learning experiences in reading, both informative and literary, oral and written English, writing, art, music, arithmetic, health, science, and social studies. Many other learning experiences such as pre-planning, planning, evaluating, thinking critically, developing dependability and responsibility were also a definite part of the unit approach.

The tape recorder was used to record some of the various activities in which the Washtenaw County pupils carried out their Air Age Unit.

As a culminating activity, at the end of the Air Age unit, the pupils shared with parents, as a room or an assembly program, the information they secured participated. This not only provided another opportunity for planning, critical thinking organization, and review, but it helped to develop a community conscious of the importance of Air Age education as part of the school's curriculum.

Teachers and supervisory personnel were assisted in helping children and teachers in these four counties plan trips to the Willow Run Airport. Excellent cooperation was received from all Airport and Airlines personnel. Many of the schools went as a single unit or combined with another school. However, a very interesting experiment was tried. A trip to the Airport was planned for 252 pupils and 20 teachers including the helping teacher from Lapeer County. This proved to be a very successful experience. Because of the distance from which the group came it was necessary to also plan for a luncheon. This was served to the pupils by the Airport Catering Service. It, too, was very successful.

Washtenaw County pupils went in groups of one or two schools, with the exception of a group of 190 pupils from ten schools who went at one time. This number did not include the ten teachers nor the parents who drove cars and school buses.

University of Michigan Broadcasting Service Makes Its Contribution

"Sky Trails" was produced for the Radio Classroom last September by Mr. William Bender, Jr., the script writer, and Mr. William Stegath, director of the series. It is interesting to note that even though no person or agency requested these men to participate in the 50th Anniversary of the Powered Flight, they decided it was an excellent topic and a "natural" for the elementary and secondary grades that comprised their statewide "radio classroom."

It also seemed natural to both Mr. Bender and Mr. Stegath in preparing the radio series "Sky Trails" to employ the same techniques for the series which proved successful in reporting the air war in Korea, namely, on-the-spot coverage, on flight lines, in pilots' cabins of planes, and in control towers. However, in order to present the two or three historical shows which introduced the series, they were forced to use standard studio dramatic techniques, it, of course, being impossible to get a ride in the famous old NC-4.

They received excellent cooperation in preparing the series from the 49th

Air Rescue Squadron at Selfridge Air Force Base, the Coast Guard Station at Traverse City, the Michigan State Police, the Michigan Department of Conservation, Airline Terminal Operators and the Commercial Airlines.

Outstanding cooperation was also received from Michigan radio stations in airing the "Sky Trails" program. The stations not only carried the program willingly, but carried it without charge. The cooperation shown by the 30 radio stations has contributed greatly to the furthering of Air Age Education in our schools.

The purpose of the series was to stimulate the pupil and teacher thinking about some particular phase of modern aviation. They realized of course that in the 15 minutes allotted to the series they could only accomplish their purpose if the teacher and children together would not only discuss the program but would be motivated to do further reading, discussing, recording and research.

A teacher's manual containing guides, questions, an aviation dictionary, a bibliography containing lists of books, magazines, and a list of addresses where free and inexpensive materials could be obtained was made available to all teachers.

The radio series, "Sky Trails," received a special citation in April from the Institute for Education by Radio, an affiliate of the Ohio State University. It has been my pleasure to observe pupils and teachers in rural school listening to "Sky Trails," and then plan how to improve their listening ability. It was decided that both the pupils and the teacher should read over, before the program, the description of the program, list the new vocabulary on the board, look up the meaning of words which they did not know, do further research on the topic, find additional pictures, choose a committee to list questions on the board before the broadcast to aid and improve their listening ability. It was also decided to use these same questions at the end of the broadcast to summarize orally what they had heard. A committee was then to be chosen to record for future class reference the oral summary. The teacher encouraged all pupils to make their own written summaries.

This was done by the later elementary grades. They also made excellent illustrations to further clarify their summaries. The early elementary grades also made illustrations. Both groups made models of some of the aircraft discussed on the program.

It will be of interest to the readers of this article, I am sure, to know that Mr. William Bender and Mr. William Stegath are Captains in the Air Force Reserve. Both men saw service in World War II and that Mr. Bender served a year in Korea as the officer in charge of radio combat reporters in the Far East Air Forces.

University of Michigan College of Engineering Makes Its Contribution.

I asked Dr. Geo. Brown, Dean of the University of Michigan College of Engineering, for information which I could include in this article. I am quoting directly from a letter which I received from Dean Brown May 11th:

"The University of Michigan offered the first course in aeronautical engineering in this country, and it has graduated over a thousand aeronautical engineers. The degree program gives the student a broad training in engineering as well as allowing him to specialize in aerody-

namics, structures and design, propulsion, or instrumentation. The courses cover problems encountered in the design and construction of aircraft and their components; the aerodynamic design of propellers, turbo and ramjet motors, and rocket motors; the fundamental aerodynamics involved in understanding the behavior of airfoils and propulsive devices; and the instrumentation required to coordinate all of the components of an airplane or guided missile.

Equipment for study of aeronautical engineering at Michigan is complete and up-to-date. The laboratories include both subsonic and supersonic wind tunnels, extensive structural test equipment, and turbojet and rocket motors. Equipment also includes electronic computers, which are playing an ever-increasing role in solving engineering problems, particularly in aeronautics. The University is conducting a vast amount of aeronautical research for the Government and for private firms."

Research is also carried on through the facilities located at the Willow Run Airport, Willow Run, Michigan. These research facilities are under the supervision of the University of Michigan.

BOOK REVIEWS

Public School Administration. By Calvin Grieder and William E. Rosenstengel. N.Y. The Ronald Press. 1954. $6.00.

This is an extraordinary comprehensive discussion of modern public school administration in our democratic society. Dr. Grieder, Professor of School Administration at the University of Colorado, and Dr. Rosenstengel, Profesor of Education, at the University of North Carolina, are educators who have had long and successful years in school administration. Their book is a testimony of their rich and varied experiences. Designed for the introductory course in school administration, the volume is a reliable guide for school superintendents and administrators. Throughout the role of the administrator as a leader is emphasized.—WILLIAM P. SEARS.

Building the High School Curriculum. By Stephen A. Monine. N.Y. The Ronald Press. 1954. $5.50.

Here is a comprehensive and very thorough survey of the secondary school curriculum in all its interrelationships. The author, who is an associate professor of education at the University of Colorado, describes specific procedures for developing and improving the curriculum and discusses the importance of pupil activities, guidance, instruction, administration and a host of other phases of school activity for curriculum development. The close connection of the curriculum to these other aspects of the educational process is constantly stressed. The large number of references to contemporary research add to the value of the book as a college text for teachers, supervisors, and administrators.—WILLIAM P. SEARS.

Through the Magnifying Glass. By Julius Schwartz. Pictures by Jeanne Benedict. N.Y. Whittlesey House (McGraw-Hill). 1954. $2.50.

Glen O. Blough, Specialist in Elementary Science in the U. S. Office of Education says, "If I could have only one piece of scientific apparatus to use with children, I would choose a magnifying glass." Julius Schwartz,, of the New York City school systems' Bureau of Curriculum Research, presents many exciting uses for the magnifying glass in this book which will serve as a guide for youngsters who want to explore some of the world about them.

DEPARTMENT OF BOOK REVIEWS

WILLIAM P. SEARS, Jr., *Book Review Editor*
School of Education, New York University

Student Teaching in the Secondary School. By William T. Gruhn. N.Y. The Ronald Press. 1954. $4.25.

Dr. Gruhn has had long years of experience in supervising student teachers both from the vantage point of the principal's office in a junior high school and from the classrooms of a teacher education institution. In this book he tells student teachers clearly and succinctly what they need to know for success in this vital phase of their training. The volume is to help the student teacher understand his relationship to the principal, to other teachers, to the pupils, and to parents. There are very practical sections on planning for the school day, for participating in guidance and extraclass activities, and for working in community activities. Considerable attention is given to the tasks of the student teacher in core-type programs and in group activities. The volumn is written in a light, informal style.

The Old Country Store. By Gerald Carson. N.Y. Oxford University Press. 1954. $5.00.

The old country store played a major role in American social history, and more especially in the life of people who lived in the rural areas in the days before the automobile and the urban centers. All of the nostalgia and the humor and the social usefulness of this homely institution have been captured in this very definitive and very delightful study. Here is the portrait of the general storekeeper who bartered store goods for local produce, wrote letters for customers, drew up notes, served as postmaster, worked on the school board, provided the public forum, and in short was the heart, soul and brain of the community. Gerald Carson covers the period from 1791 to 1921 and his lively account is drawn from prime sources—old store account books, manuscripts, almanacs, diaries, newspapers, and county histories. This is a splendid contribution to American social history—WILLIAM P. SEARS.

Speech in the Elementary School. By Mardel Ogilvie. N. Y. McGraw-Hill. 1954. $4.50.

Elementary school teachers, supervisors, and consultants will welcome this very helpful, sound, and practical book in the language arts. The volume describes and explains the speaking activities and indicates, clearly and specifically, the part the teacher can play in improving the speaking habits of children. There are ample suggestions of things to do and selections suitable for use in the classroom. Throughout the author stresses the relationship of the speech activities to language development. Of especial interest are the standards of voice and diction set forth by the author for elementary school youngsters. In-service teachers will find the book one that will guide them in their daily work in the language arts while prospective teachers will find the book a text of real value in their training days.—PAUL ZANKOWICH.

Seduction of the Innocent. By Fredric Wertham, M.D. N. Y. Rinehart and Company. 1954. $4.00.

School people will want to read, mark and inwardly digest the charges made by Dr. Wertham in this provocative book. The volume considers the influence of the comic books on today's youth. Wertham flatly charges that comic books are an invitation to illiteracy; create an atmosphere of cruelty and deceit; stimulate unwholesome fantasies; suggest criminal and sexually abnormal ideas; creates a readiness for temptation; and suggest forms a delinquist impulse may take and supply details of technique. These are only some of the points Dr. Wertham raises and attempts to document. The author is also concerned about the part played by certain educators who have given the comics a relatively clean bill of health and their connections with the publishers of the comics. The book is a most challenging one.—WILLIAM P. SEARS.

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